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GLEANINGS

A JOURNAL DEVOTED
TO BEES
AND HONEY
AND HOME
INTERESTS.

BEE CULTURE

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No. 18.

STRAY STRAWS

FROM DR. C. C. MILLER.

ONLY THREE WEEKS till the convention at St. Jo—excuse me, brother Abbott—seph.

IN GERMANY they have a convention of bee-keepers as is a convention—from Sept. 1 to Sept. 16!

THE STING-TROWEL THEORY, that Rev. W. F. Clarke first gave out as a fact, he now holds only as a supposition.

FRUIT GATHERING time has come, and we find these boxes just capital that come from Medina with sections.

MY BEES seem to empty the feeders faster in daytime than at night, although the nights are warm, and bees fly well all day.

TO PREVENT second swarms, says *Rucher Belge*, run a laying queen in at the entrance on the day of first swarming, smoking before and after.

I SECOND that motion, on p. 681, to reduce the N. A. B. K. A. affiliation fee; at least, to let affiliating societies have full value for their money.

QUEEN CELLS, when you cut them out to use, are often daubed with honey. Lay them on top of the frames or at the hive-entrance, and the bees will clean them off.

THE *British B. J.* says no greater mistake could be made than to extract from the brood-nest in the fall, to replace with sugar syrup. Your head's level, Mr. Britisher.

A NEW CLOVER, *Trifolium incarnatum rusticum*, is highly spoken of in Germany. I think it is an improved Italian or scarlet clover, and it is said to grow three feet high.

A POINTER that W. R. Grannis didn't give on p. 702 is, that raspberries don't suffer as much as other things from being in partial shade. I've had good crops between apple-trees.

WE ALL LIKE to tell a big story about our honey-yields, but my report on p. 693 is exaggerated a little too much. The omission of a decimal point makes my average 16 oz. It

should have been just one-tenth that. My entire crop came from one colony.

"DOES AN OLD QUEEN pipe?" Reepen answers in *Centralblatt* in the affirmative. No doubt about it. I've both heard and seen an old clipped queen piping.

SEVERAL SAY that the way to manage sticky fingers is to carry a wet towel along, some having a pocket for that purpose. If it weren't for the trouble, a wash-dish would be a good addition.

GRAVENHORST, the able editor of *Deutsche Illustrierte Bienenzeitung*, has prepared a paper for the N. A. B. K. A. convention, giving interesting details as to apistical matters in Germany.

"IF A COLONY has a virgin queen, also unsealed queen-cells, is there any danger of swarming?" is a query in *A. B. J.*, and the veterans are all mixed up in their replies. I'd like to know the true answer.

I'D HAVE GIVEN two spools and a potato pop-gun to see the real face when Ernest opened on the counterfeit, p. 691. [Yes, you knew all about it when I was at Marengo, and kept mum. How could you?—Ed.]

PROPOLIS is recommended in *Revue* as a cure for corns. Use as a plaster. Why wouldn't propolis make a good adhesive plaster for general use? [If there should be a general demand for it, we can spare a little.—Ed.]

OBSERVER, in *Progressive*, says when frames of brood are given to colonies having laying workers, nine times out of ten "if adhering bees are given with the brood, a cell or a queen can be given at the same time if other conditions are favorable."

THAT WIDE-AWAKE dreamer, Somnambulist, in *Progressive*, bears testimony to the efficacy of bee-stings in rheumatism, from personal experience. But it looks almost like a case of real somnambulism when he says he didn't feel the stings—only saw the bees prodding him.

WM. McEVoy, in *A. B. J.*, indorses Prof. Cook's view, that bee-paralysis is caused by starvation, and says there will never be trouble if bees have plenty of *unsealed* stores while

brood-rearing is going on. [I have seen bee-paralysis in several instances where there were plenty of unsealed stores.—Ed.]

THE *American Bee-keeper* says there are several candidates for president of the N. A. B. K. A., and announces its own. First time I ever heard of a candidate in advance of the meeting, and I doubt the wisdom of prejudicing any one's chances in that way. [So do I.—Ed.]

ASKED WHETHER it was better to reduce the room in a 10-frame hive by putting in two dummies or two combs filled solid with honey, 11 replied in *A. B. J.* in favor of the combs of honey; 7 preferred dummies, and 3 were non-committal. Large-hive men will claim that as an argument on their side.

NO CONVENTION did I ever enjoy more than the last one I attended. It was at our house, Aug. 23. The discussions were earnest, but the order wasn't always the best, two speakers often occupying the floor at the same time. Ernest wanted to talk more than his share. [Don't you believe the doctor. 'Twas the other way.—Ed.]

I'M GLAD TO KNOW that the younger Root is not given to stimulants. He takes coffee as weak as I do; and when I said, "Will you have some pepper?" he left the table. [Yes, and nearly choked to death over the *very idea* of it. Don't believe it? It's a fact, and Dr. M. could a tale unfold, but I guess he'd better not.—Ed.]

ONE OBJECTION to those solid yellow bees is the difficulty of finding the queen—workers and queen looking so much alike. [And another objection to them is, that the majority of them seem to be bad stingers. The finger holding this pen is smarting from a sting just received from one of the yellow ones; but, as I have said before, not all these yellow bees are cross.—Ed.]

ON THE NIGHT of Aug. 22 I was awakened by a tramp and a bicycle who wanted a bowl of milk. I mean the man, not the bicycle, wanted the milk. After a heavy coating of dust was removed, he turned out to be a Medina editor. [Tramp? That about describes the way I felt; but all the same I was fed well and bedded well. I'll tell the rest of the craft to call that way.—Ed.]

BRACE AND BURR COMBS have been mercilessly fought by nearly all. Doolittle comes to their defense in *A. B. J.*, saying the bees need them for ladders, and that their great value consists in the fact that with them bees commence so much sooner in supers. [My own observation in scores of apiaries, and the reports that I have read, all go to show that, when the bee-spaces are correct, burr-combs have no effect either way. Doolittle is almost always right, but in this case I think he would change his mind if he were to travel among bee-keepers as I have done. See Editorials.—Ed.]



THOSE SHIPLOADS OF CUBAN HONEY.

CUBA AND THE HONEY TARIFF; THE DARK SIDE OF CUBAN BEE-KEEPING.

By Fred O. Somerford.

I notice in GLEANINGS of July 15th an article from Mr. H. F. Moore, on page 574, in which he seems to be particularly aggressive against Cuba and her honey-producers. While I admit that friend Moore's article was an able one (for the protectionist), yet with the utmost cordiality, and with malice toward none, I can not refrain from questioning the ground of his insinuations about Cuba. In the first place, he intimates that we bee-keepers this side of the Gulf can produce honey for almost nothing—a statement that is more or less generally believed by our Northern brothers; and to those in the business here it sounds "fishy" in the extreme. As one of Cuba's bee-keepers who has produced something like 200,000 lbs. of honey in the last few years, I am in a position to know the realities that are in the business; for it must be remembered that, in starting apiaries here, every thing has to be imported; and as freights and duties are so high, the first cost of an apiary here is generally very great, to say the least; and when the additional high cost of living, caused by Spanish importation duties, is taken into consideration, also the dearer cost of land, rent, etc., all having a tendency to make the conditions far different from those generally supposed to exist in the "Queen of the Antilles," and after some years in the business here, I have gradually, and, I dare say, truthfully, come to the conclusion that, unless we get as much as 35 cts. per gallon for extracted honey there is very little margin left for the producer to glory over. It must also be remembered that we are occupied twelve months in the apiary here, instead of six, as is generally the case in America.

I was somewhat surprised at friend Moore's assertion about "cheap and even slave labor." Cheap labor in Cuba is, and has for some time been, remembered as a thing of the past; for the sugar-cane industry here, with its numerous costly factories, has assimilated all the cheap and idle labor in the production of 1,000,000 tons of sugar annually, and wages have advanced until the laborer no longer receives as his reward a European pittance, but is paid nearly as well as his more fortunate comrades in America; and if Spain would only tear down the Chinese wall she has built around her subjects here through her custom-house—emancipate them, as it were—the island would no longer be considered an inferior place for developing the highest traits of manhood.

As for friend Moore's slaves, I am happy to say they exist only as a "protectionist's fabrication," for political wire-pullers to mislead the public, as slavery has been abolished a great many years. There is very little Cuban honey sent to America to be sold, as the commission men here depend mostly on European markets. Even if the duty were lowered to 10 cts. per gallon, it is hardly possible that much honey from here would be sold in American markets; but it might be favorable to Cuba by making American markets open to Cuban honey, thus stimulating competition with the buyers of Europe; but it is impossible that the importations increase a large amount in America, as there are only about ten movable-frame apiaries on the island, and they are owned by Americans, with but few exceptions. There are, however, numerous box-hive apiaries that receive but little attention, and give corresponding results. And as for those "shiploads" of honey ready to be dumped on American markets as soon as we have favorable tariff legislation, that, too, exists only as a supposition, for in reality there is not honey enough on the island now to furnish ballast for one ocean steamer.

That America has competitors in nearly every manufactured article exported is not to be doubted; neither is it to be questioned that, in all Latin-American countries, her fabrics are most sought after; but that Cuba, as it exists to-day, will become her competitor in the production of honey, and entail a loss of half a million dollars a year to American bee-keepers, will hardly be indorsed by an intelligent people—much less entertained for a moment by the writer.

San Miguel, Cuba, Aug. 22.

[Notwithstanding our purpose, as already stated, to drop the tariff discussion, it is no more than fair that a resident of Cuba have a chance to state the facts so far as they really exist on that island; for by reason of the distance he has not had an opportunity hitherto to state his side. Quite a number of bee-keepers, to our certain knowledge, were expecting to move to Cuba; and it is certainly very important that the *dark* as well as the *bright* side should be presented. When bee-keepers ask our advice regarding the advisability of emigrating to some more favorable clime, we generally say, "Stay where you are." All locations have their bright as well as dark sides; and, too often, the "dark side" has been discovered after a long expensive trip, and an entire failure of honey.—Ed.]

RAMBLE 116.

SANTA PAULA AND VENTURA.

By Rambler.

The next honest bee-keeper we clasped hands with was Mr. R. Touchton, of Santa Paula. Mr. T. regulates the affairs of his city by holding the office and performing the functions of

justice of the peace. In other words, he is a sort of queen-bee of the city. The city was evidently behaving itself in a proper manner, for we found the justice's office locked, and he was about other business. We were welcomed at the house by Mrs. Touchton, and, soon after, the worthy esquire put in an appearance, and we discussed bees and a good dinner for an hour or so. Mr. T. is not largely engaged in honey-production at present, but has enough work in that line to keep him busy some weeks. His wife is as much interested in the pets as himself, and is a willing helper during the honey season. We find that nearly all bee-keepers' wives are thus interested in their husbands' management of the bees, and think it next to a picnic to get out to the bee-ranch for a season. It seems to relieve the monotony of the every-day home life.

Mr. Corey's residence is but a short distance away, but he was out on his bee-ranch in the Newhall region. We regretted to miss seeing this veteran in our industry. His face and voice are always so prominent in our conventions, and the Messrs. Corey, Touchton, and Richardson, all of Santa Paula, are such helpers upon such occasions, that it is a pleasure to meet them; and it is to be regretted that there are not more like them to take an interest in such matters. Mr. Richardson was also out of town. He works the trade of architect in with bee-keeping; and during this off season, when his tons of honey will not be so numerous as they were last year (64 tons), he is plying his trade in the Ojai (*Ohí*) Valley.

Mr. Touchton had the same story to rehearse as the rest—no honey, and a good prospect for feeding. Santa Paula had also grown since our last visit, and still continued to be the center of the coal-oil industry, the pipes leading out from here to the many wells in various localities miles away. Our stop with Mr. Touchton was for only a few hours, and we were on the road again.

Soon after leaving Santa Paula we enter the great bean-belt of Ventura Co. The largest bean-ranch, 16,000 acres, and all to beans, is owned by Dixie Thompson. The withholding of winter rains was having its effect upon the bean, and the output will be several score carloads less than usual.

We entered Ventura near evening, and, having learned from Mr. McIntyre that Messrs. Wilkin, Mercer, and Mendelson, were out to their apiaries, we concluded that our stop would be short in Ventura, and camped that night near the river, with the intention of pushing along again the next morning. When that time arrived we resolved to have some repairs made upon our wagon; and, unloading our movables into our tent, Mr. Wilder went off calmly to superintend the repairs, while I remained in camp to answer several letters which I had just received in Ventura. A budget of

letters and papers always gives new interest and new life. I was in the midst of my writing—in fact, right in the middle of a letter—when Mr. Wilder, who went away so calmly, came up at a tearing rate, with only Keno, on a light wagon. We had resolved to make a short sea-voyage out to the islands if we had the opportunity. Wilder had just learned that a fishing-smack would start in just half an hour. It took me about a minute to focus my mind from letters to sea-voyages, and then we tumbled things into the wagon and were off; but disappointment awaited us. The smack took the first favorable breeze, and left before the half-hour was up. While sadly contemplating the vicissitudes of this life from the door of the blacksmith's shop, where our camping-outfit was scattered pellmell around us, whom should I see but Mr. Mendelson driving by on his cart! The recognition was mutual. He reined his

bler, spent a very pleasant day in the Ojai Valley. Mr. Crampton owns an apiary up one of the canyons, which ordinarily yields good profits. The valley is devoted largely to fruit, and of excellent quality. We were pleased to meet Mr. Richardson, of Santa Paula, who was busy erecting a large and elegant mansion for some eastern capitalist who evidently thought the Ojai Valley, with its surrounding mountains, a very paradise in which to escape from the rigors of the eastern winters.

We were on hand early the next morning for the boat; but it did not arrive, and we returned to Mr. Mendelson's. Mr. M. is making improvements on his ranch, and, having in contemplation the erection of a new building, Mr. Wilder and I offered to help. The Rambler, with square and scratch-awl, laid out the architectural plan. The building was three feet six inches long, three feet three inches wide, and six and a half feet front elevation. We all hammered, sawed, and talked, at a great rate. There was a large knot-hole in one of the boards. Said I, "Mr. M., shall I nail a piece of tin over this?"

"Oh, no!" said he; "leave that for ventilation."

The board at the gable end lacked an inch or two. "How is this, Mr. M.? Shall I put a piece biasing over that?"

"Oh, no! let it go for ventilation."

Our boards for the door lacked about six inches at the bottom.

"Shall I put a thin board over that?" said I.

"Oh, no! let it go for ventilation."

These little short cuts for ventilation shortened our work materially; and before sunset the building was completed, and is

an ornament to the grounds.

Mr. M. is a lover of the rose, of which he has 70 varieties in his apiary. I have no doubt the new building will be hidden under one of those climbing varieties, excepting, perhaps, those places left for ventilation.

It will be remembered that a description of Mr. M.'s apiary, and a half-tone of himself, appeared in GLEANINGS, page 462, 1892. Mr. M. lived for several years in California, a more or less happy bachelor; but last winter a different spirit entered his dreams, and his friends were suddenly surprised to hear that he was married. He seems to live just as happily as before, and his house shows that deft hands are there to make things more homelike. Mrs. M. came from Denver, and this is the first of her life on a California bee-ranch; and, considering the



"THE SHIP'S GONE, SURE!"

steed up short, sympathized with us about the sail to the islands, and wound up by saying that, if we would stay over, he would go with us when we could get the boat. We went out to Mendelson's bee-ranch, and camped in his door-yard.

We found that Mr. Mercer was also at home, and he also seemed willing to go to the islands. Then Mr. Crampton, his neighbor, and also a bee-keeper, thought he would also like to go; so upon the whole we stopped regretting our first disappointment, and were glad that the change happened; for now we should have several happy bee-keepers with us. The fishermen would not be back for at least two days, and meanwhile Mr. Mercer and wife and sons, Mr. Mendelson and wife and daughter, Mr. Crampton, wife, and daughter, and the Ram-

lonesome and secluded place occupied, she takes hold of the situation bravely. When we crossed Mr. M.'s path in Ventura he was indulging in dreams of bean honey. Every year he moves an apiary into those great bean-fields. An eighty-acre grove of those tall gum-trees gives shelter, and makes a beautiful place in which to plant an apiary. Mr. M. calls this his movable apiary. Every thing is fitted for moving in the shortest space of time in preparation. The extracting-house is so constructed that it can be taken apart in sections, and folded into a small space. The upper half is surrounded with wire-cloth screen; through this the swarming operation can be watched, and it

neighbors, has several times paid quite liberal damages. No method, it seems, can be devised to prevent the bees working on fruit. To cover with screens is too expensive; to shut the bees in their hives is also expensive, and troublesome and dangerous to the bees. It might be asked why the apricot-grower does not dry* by artificial heat. While it is done for some fruits, it is evidently cheaper to dry by the natural heat of the sun, for it is sure to shine every day for months.

Mr. Mendelson is an enthusiast in the bee-business, and, for the sake of continuing in it, he has thrown many mercantile chances over his shoulder, and does not seem to regret it.



MENDELSON'S MOVABLE BEAN-FIELD APIARY.

also serves the gentleman's hobby of thorough ventilation. The twelve-step step-ladder and Manum swarm-catcher, Mr. M. thinks, are invaluable aids where the bees persist in getting to the top of those tall trees.

The bean-field apiary is usually worked with 200 colonies; and, being located three miles from water, the fluid is hauled to them in one of those big sixteen-barrel tanks so common in this region.

Mr. M. has had much experience with out-apiaries, having at one time four upon his hands. He thinks he can work two to better advantage than he can a greater number. The greater number requires more helpers and more expense.

Fruit-drying interferes with bee-keeping in this valley. Thousands of apricot-trees dot the landscape. The fruit is dried largely, and bees will work much upon the drying fruit. Mr. M., in order to live in peace with his fruit-

There is one point in Mr. M.'s management that shows his business qualities; and that is, he usually gets a good price for his honey, or a little better than the rest of us. With that remark I will leave Mr. M. until our next.

THE PERFECTION OF FRUIT GROWN ON AN ISLAND WHERE NO BEES ARE KEPT.

BEES DO NOT INJURE GRAPES: SOME INTERESTING OBSERVATIONS FROM AN OLD SUBSCRIBER.

By Thaddeus Smith.

A week ago I spent several days at Sandusky, Put-in-Bay, and Middle Bass Island, my objective point being Mr. George M. High's, on the latter island, to see what success was made this year in growing fruit where bees do not visit. On my return home I found GLEANINGS, with your account of your visit to Catawba Island, etc. It would have been a great plea-

sure to me to meet you and taken you to see Mr. High's fruit. You would have found his peach-orchard cultivated with the same care that you found on Catawba Island, and loaded with like beautiful fruit; and, in addition to peaches, you would have found splendid apples, pears, and plums, to say nothing of a beautiful well-loaded vineyard with some hundred or more varieties of grapes. And these were grown without the aid of bees or other insects to fertilize the bloom.

When Mr. High's attention was called to the discussion of this matter of fertilization he became quite interested in the subject, and watched the bloom upon his fruit-trees very closely to see if he could discover any insects upon them. Bees, he knew, never visited his island. He made it a point to examine his peach-trees three times a day, but could not find any insects of any kind on the bloom. He thinks that, if you should visit his trees when in bloom, as you suggest you would be willing to do, you would have to bring more powerful magnifying-glasses than your spectacles, to find any insects.

Did you think to inquire whether bees were kept on Catawba Island? But even if they were, we know that there are no bees on some of the other islands where fruit is grown in the same perfection as on Catawba Island. Mr. High's evidence shows that other insects had but little to do with the matter. But Prof. Cook, long ago, in his zeal to show that bees are necessary, gave this "other insect" theory a black eye by showing that there are comparatively very few or no insects flying as early in the season as early fruit-bloom, in a northern country like this.

It is very hard to convince some people against their will or their interest. I have long since decided, by close observation and careful experiment, that bees do not injure perfectly sound fruit, particularly grapes, which are my specialty. I made a visit to my old home in Kentucky this spring, where I met an old friend—a bank cashier, but an amateur grape-grower and gardener. His grapes, of several varieties, were beautifully cared for, and bore well; but he said that he could get but little good of them, as the bees ate them all up. Of course, I took issue with him, and we had quite a discussion over the matter. "Why," said he, "don't I know? When I covered the grapes with netting I saved them from the bees!"

"My friend," said I, "don't you know that, when you covered your grapes, you kept the birds and wasps from them also?"

I had endeavored to show him that the grapes were punctured by birds or wasps before the bees visited them; but no arguments or facts could convince him that the bees were not the real depredators, and he even went so far as to believe that he was justified in destroying them.

Like this friend, some are saying, "Don't I know that bees are necessary to fertilize fruit? because, the season that we had a cold wet spell during fruit-bloom the bees could not fly, and we had no fruit that year!"—forgetting the fact that every intelligent fruit-grower ought to know, that cold wet weather prevents pollen from being disseminated in the natural way. We jump at conclusions without giving due weight to all the facts and evidence in the case. The evidence in favor of the bees is entirely of a negative character, while there are many positive facts to show that fruit has been produced, plentifully and good, where there were no bees. But it is was not my intention to discuss this matter. I started out only to call attention to the fruit on islands where there are no bees.

You kindly mentioned in GLEANINGS, that I was a reader of it when printed by wind power. Yes, my interest in you and your writings goes still further back—to the days when "Novice" wrote for the old *American Bee Journal*. You remember the exciting discussions we used to have on the "hive question." I remember the interest I felt in your account of the absconding swarm with the queen called the "Giantess," etc. I have read your writings from them up to the present time, so closely that I feel not only that I was acquainted with you, but that you were an old friend, and that I knew all the family.

Pelee Island, Ont., Can., Aug. 25.

WORK IN THE APIARY.

A PERFECT SYSTEM OF KEEPING TRACK OF IT.

By Wm. Muth-Rasmussen.

When a bee-keeper has many colonies to attend to, it will not do to go by guesswork or to trust to memory; neither does it pay to spend time examining colonies that do not at present need any attention. The bee-keeper should at all times know the condition of each colony, its special requirements, and the exact time when it ought to be attended to.

I formerly used slates on the hives; but as my colonies increased in number I found the slates unsatisfactory for this purpose. I now use them only on the supers, simply writing the date of the last emptying or examination on the slate, while its position on the hive-cover indicates what I want to remember. To prevent it from being moved by the wind or other accident, I drive a one-inch wire nail through the hole in the slate. The nail is easily moved, when required, with a little magnetic tack-hammer. I write the date on both sides of the slate, for fear that a shower may obliterate the writing on the upper side. It is quickly done; as, for instance, "7" means July 1.

Having had, during the last two years, to requeen a large number of colonies, I have de-

vised and perfected a system of record which gives me entire satisfaction. The nearest I have seen to it is in occasional hints in articles from Dr. Miller and Miss Wilson, but never any thing very definite, so far as I remember. In the hope that my system may be of use to others, I give it herewith.

I use a small note-book, which I carry with me, when at work, and a memorandum-calendar. In order to find quickly the page I am using, I slip a spring-clothespin over the opposite leaf, the rest of the leaves, and the cover on that side of the book. The pages in my note-book are ruled from top to bottom into seven columns—one wide column in the middle and three narrow ones on each side. In the first column, at the left, I designate by a (any) letter those colonies that require the same attention or are in the same condition; for instance, all in which queen-cells should be found hatched may be indicated by the letter "a;" all in which young queens should be found laying, by "b," etc. The second column contains the numbers of such colonies as require attention on a certain date. The third column gives the date of last examination. The fourth (wide) column is for items. If I know beforehand what is to be done with a certain colony I enter it here; and when it is done I check it off in the fifth column. If the colony should be found in a certain condition—for instance, having a young queen beginning to lay, it is entered (in abbreviation) in the fourth column, with an interrogation-point; and if found as expected, the mark is crossed out. If, for any reason, it is necessary to review previous record, I write "vd." (see) in the fourth column. For economy of space, and quickness of writing, I use abbreviations as much as possible in these items. One or two letters are sufficient to indicate what I wish to record. Sometimes signs are used. For instance, "q" for queen, "hy" for honey, "ncl" for nucleus. "c" for cell in queen-cell protector, "+" for dead, "x" for clipped. In the sixth column is noted the date when each colony will again require attention. When I am through with my day's work I enter in the memorandum-calendar, under the respective dates, the numbers of colonies to be attended to on each date, and add to each number the date of last examination, found at the head of the page in the note-book (not the previous date in the third column). As soon as entered in the calendar it is checked off in the seventh column. Thus I avoid missing any. Now for the practical application:

On the morning of any day when the calendar shows that there is work to be done in the apiary—or perhaps on the preceding evening—I write the date at the head of a page in my note-book, and then copy the numbers and dates from that date in the calendar into the note-book, each number being given one or two lines for its special items. Under date of July

3 I find this: 104, 28—16, 1—72, 2—(and perhaps many more). This means that colony No. 104 was last examined on June 28; No. 16 on July 1, and No. 72 July 2, etc. Nos. 104, 16, and 72, are now written in the second column of the note-book on separate lines underneath each other, while the dates, 28, 1, and 2, are added in the third column opposite their respective hive-numbers. As fast as entered in the note-book they are crossed out in the calendar. I now look back to the previous date for each number; and if I find, for instance, that I gave No. 104 a queen-cell in cell-protector, I write in the fourth column, opposite 104, c h?, which means that I expect to find the cell hatched. Take No. 2 for an example, and let us follow it from date to date:

July 2.

| 72 | | Blacks; unqueen and start es. | ✓ | 3 | ✓

July 3.

| 72 | 2 | Took away q. and all brood. | ✓ | 4 | ✓

July 4.

| 72 | 3 | Gave It. bd. from 195. | ✓ | 12 | ✓

July 12.

| 72 | 4 | Cut out qcs, left one. | ✓ | 20 | ✓

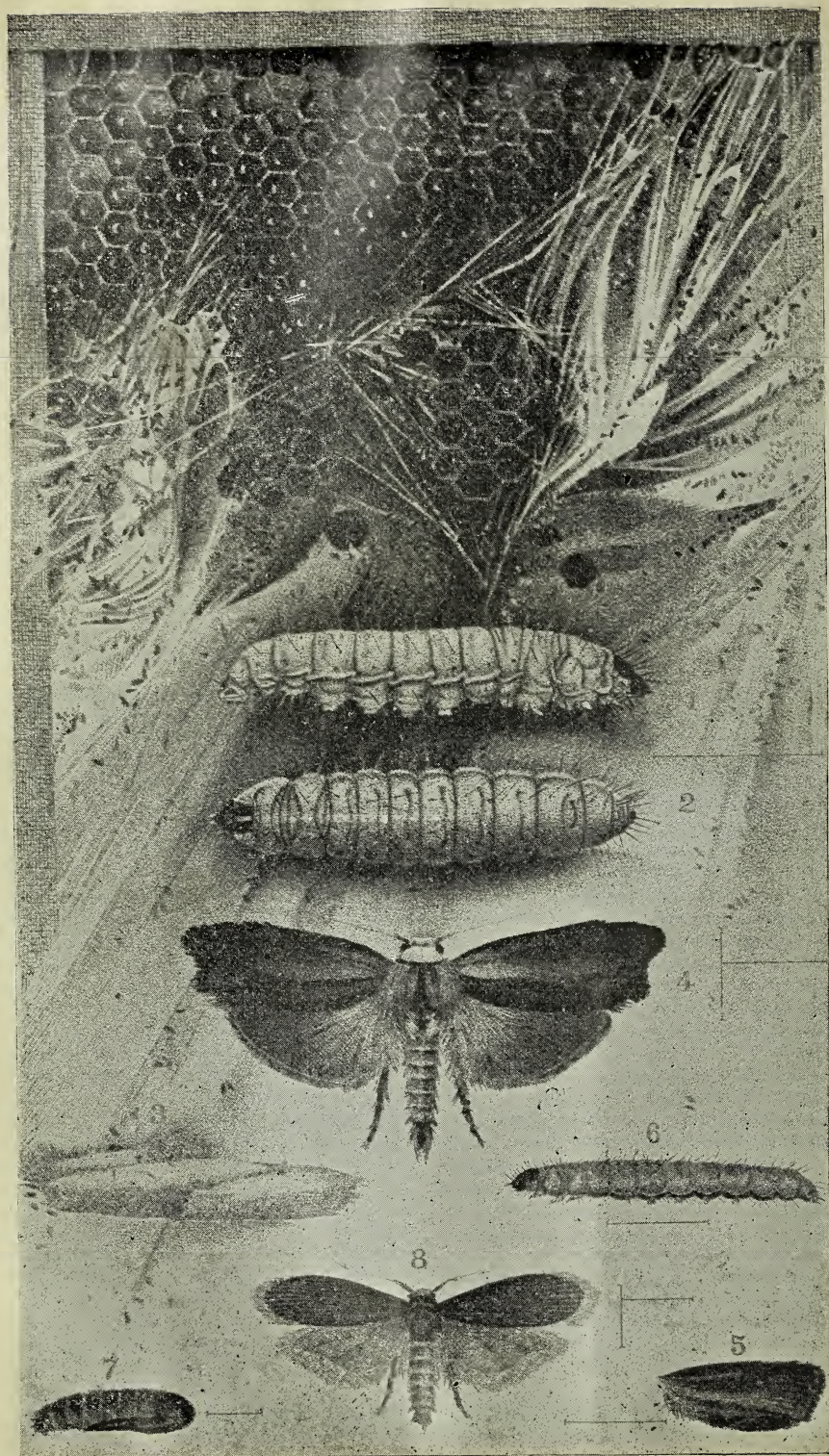
July 20.

a | 72 | 12 | c hatched; gave brood. | ✓ | 28 | ✓

July 28.

b | 72 | 20 | Laying, clipped, and recorded. | ✓ | — | —

On July 3, I see, by looking back to the previous date, I found it to be a good strong colony of black bees, and determined to set them to raising Italian queens. I therefore take away the queen and all unsealed brood; note this in the book, and write "4" in the sixth column as the date for next attention. On the next day (the fourth) I give them brood from a choice queen, and mark them for examination on the 12th, when I expect to find queen-cells capped and ready to cut out. July 12 I cut out all the cells except one, and dispose of them by distributing them among queenless colonies, or by placing them in separate cages in a queen-nursery for future use. July 20, according to previous record, I find the cell, which I left in No. 72, hatched. I remove the cell-protector, if such has been used, and give a comb with eggs (or a small square of comb from one of my breeding-queens, inserted in one of the old combs); "28" is marked in the sixth column as the date when I expect to find the queen laying. Now if, on that day, I find good queen-cells on this comb (given on the 20th), I know that the queen has been lost; but if such queen-cells have been destroyed I know that she is all right, even if I do not see her; and if I find no eggs yet, I conclude that she has not begun laying, and make a new date, three or four days later, for further examination. If, however, the bees had started cells on a piece of comb (or a whole one) from one of my breeding-queens, the loss would not be so serious, as in all probability they would soon have another



young queen, as good as the first one. But if every thing has gone as at first expected, I find the original young queen laying. I now clip her wing, and enter in a separate record-book, the "Apiary Register," for instance, the time when she was raised and clipped, the number of colony in which her mother is found, or some special mark indicating the strain to which she belongs, besides her size and color. Later I will add how her workers turn out in regard to purity, etc. As there is nothing more to do with No. 72, the space for future examination (in sixth column) is crossed out, and that colony is dropped from further attention, at least for the present.

This system may, on first reading, seem complicated, as it takes so many words to explain it; but it is, in reality, very simple when one gets used to it. In fact, I do not see how I could manage an apiary of over 200 colonies, and attend to requeening and other matters at the proper time, without it. Nothing is forgotten or omitted which ought to be done, and every thing is done at the right time. If it is not possible or convenient to attend to a colony marked for a certain date, it is transferred to the next day and attended to in preference to any thing else.

On separate leaves in my note-book I keep a record of colonies that need requeening, so that, when I have a surplus of queen-cells, I know exactly where they may be disposed of to advantage. On other leaves I mark colonies needing brood or having brood to spare; needing honey, or having honey to spare, etc.

Those who have had occasion to kill queens for superseding, and have used their fingers for this purpose, know that the fingers acquire a strong scent of the queen, and that bees will be constantly running over the finger-tips, attracted by this scent, and that one is in constant danger of pinching bees and getting stung while the fingers retain the scent. I now use a common three-pronged table-fork to catch and kill queens with, thereby doing away with the necessity of handling them at all.

AN AID IN FINDING QUEENS.

In hunting up queens for removal or clipping, I use a small board, a little thicker than the height, and a little longer than the width of the entrance. The width of the board is immaterial—two or three inches will do. This board is beveled off on the ends and on the shortest edge, so that it can be easily pushed into the entrance before removing the hive-cover. It prevents the bees from boiling out at the entrance when the hive is opened, and does away with a great deal of the excitement frequently occurring at this operation, and particularly when the front comb, next to the entrance, is removed. As a rule, that comb, when the frames run parallel to the front of the hive, should be left to the very last, as its removal causes great excitement among the bees; but

this is almost entirely done away with by the use of the entrance-stopper. The bees may boil up over the frames, but will quiet down by the use of a little smoke. The queen will frequently be found on this front comb, to which she gradually retires as the other combs are lifted out; but if she is not seen on any of the combs she will be pretty sure to be in one of the front corners, next to the entrance.

In conclusion, I will only give this warning (with a big W): Do not forget to remove the stopper when you close up the hive, or you may smother a good colony.

N. B.—I haven't smothered any yet, but I have several times forgotten the stopper for a few minutes, or until I needed it the next time.

Independence, Cal., Aug. 15.

FEEDING SIMPLIFIED.

A BIG IMPROVEMENT—ONE THAT PROMISES TO SAVE BEE-KEEPERS MUCH; A VALUABLE ARTICLE.

By Dr. C. C. Miller.

I've been having lots of fun trying different ways of feeding. It seemed that, to do all the feeding I should want to do this year, the percolator I had would make too slow work. Yet after trying it, and finding how little work it was, I was loath to go back to the old plan of boiling syrup. I might make additional percolators, or a larger percolator; but while I was about it I thought I might as well try to have a plan by which the percolating would be done on the hives. If I could just carry the dry sugar to a hive, also the water, it would save a good deal of work, as well as annoyance from robbers. Especially would this be desirable with the out-apiaries, for only the sugar would have to be taken there, the water being readily at hand.

Another point of advantage would be, that, to each colony, I could more easily give just the amount I thought desirable; for with syrup it isn't so easy. You may have a measure that is exact; but with the dripping stuff there is likely to be some variation, and there may be some variation in the strength of the syrup. But the dry sugar is uniform in strength, and easily measured to a quarter of a pound. Before trying the thing on any large scale, I tried small quantities; and in this I think I struck on what might be very satisfactory for those who want to practice

STIMULATIVE FEEDING.

First, I tried letting the bees directly on the sugar. In England a damp quality of sugar is used, and what is called dry feeding is much practiced. I thought I would vary that by taking granulated sugar and wetting it. I nailed a bottom on a T super, and made an inch hole in the bottom for the bees to come up through. Remember, this was hot weather in August,

and it took no baiting to get the bees to come up. In the super I set a saucer, poured granulated sugar into it, then poured on water. The bees promptly went to work at it, worked out all the moisture, and left the greater part as dry sugar. Of course, by pouring on more water more feed would be taken; and I can easily see that, for stimulative feeding, where fresh feed must be given every day or every other day, here was an excellent plan. Just put into a super prepared as I have mentioned, or into any box on top of the hive, a tin dish containing 5 lbs. of sugar. Pour water on, but not enough to have any standing on top. Next day it will be worked dry, and you will put on a little more water. The less water put on, of course the slower the feeding will be. You will see that this stimulative feeding will be simply giving a little water each day.

I tried putting on more water at the first, so as to have it wet enough for the bees to carry it all down without any second filling, but I failed. To have enough water on to dissolve all the sugar, I left the water standing on the top with so little sweet in it that the bees didn't care for it, and with the chance of drowning if they did work on it. Then I thought I would try

PERCOLATING ON THE HIVE.

First, on a small scale. I took a tumbler, filled it half full or more with water, then filled it up with granulated sugar. I laid over the tumbler a piece of flannel large enough to completely cover it, and over this I turned a saucer upside down. Then taking hold of the saucer with one hand, and the tumbler with the other, I quickly reversed the whole business. I put this into the super over the hive that I have already mentioned, and in about 48 hours it was empty. This would also do well for stimulating, and I'm not sure but it would be well to have the tumbler two-thirds full of water before filling up with sugar. No unusual machinery is needed; cups and saucers are always on hand, and any cloth, cotton or woolen, will answer. Several tumblers can be used on a hive at a time, or a fruit-can or other larger vessel can be used, in the case of feeding up for winter.

I tried a jelly-tumbler with a tin cover. The bees couldn't get anything out of it. Then I bent the cover open a trifle at one spot so the bees could get a very little, and it took about two weeks for them to empty it. So the matter can be gauged for fast or slow feeding.

Then I studied on a plan for something larger. A percolator like the one I had been using, only larger, could be arranged to operate on the hive; but to have a number of these would make troublesome storing, to say nothing of the expense. Would a percolator work if it were shallow instead of deep? Was it necessary to have a thickness of several inches of cotton for the syrup to percolate through? The

working of the tumblers seemed to show that it was not; and, really, all that I could see to be necessary was for the syrup to be allowed to come through slowly and at the bottom. A little crack in the board would be all right if small enough. It must be at the bottom; for if at the top, only water would come through.

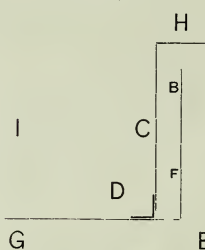
I could easily try the thing with a Miller feeder. I took one of the original pattern, stuffed cotton rags under the board where the syrup passes through, put a mixture of hot rosin and beeswax in the corners so nothing could get through except at the bottom, put it on a hive, poured in sugar, then water, at the rate of five quarts of sugar to four of water, and found it "all my fancy painted it."

Having a goodly number of Miller feeders, I didn't need to get up any other feeder; but with what experience I had had I felt I wanted to make at least one feeder such as I would now make if I had none. I made one a little simpler than either the original Miller feeder or the one with Ware's improvement, but on the same principle. The old Miller feeder had two feeding-places for the bees, one on each side; the new one has two feeding-places in the middle. The percolating feeder has only one feeding-place, and that is at one end. This allows, by having the hive tip a trifle, a full supply at the feeding-place just as long as any feed is left, and I find one end gives room for the bees, without crowding.

Those who are familiar with the Miller feeder will need no further description. Others may understand it from the diagram showing a transverse section of one end of the feeder, the only end where any feeding is done. Take a T super, or a box that will nicely fit over the hive, with a bottom $\frac{3}{8}$ inch short, leaving the passageway E for the bees to get up through; $\frac{3}{8}$ inch from the end A of the super put in another wall, B, extending to within $\frac{3}{8}$ inch of the cover H, and fitting tight at the bottom. A third wall, C, with a $\frac{3}{8}$ space between it and B, comes clear to the top and down to the bottom; but in putting it in, two thicknesses of flannel are put under it, or between it and the bottom G.

When the feeder is put on the hive, the mixture of sugar and water is put into the main compartment; it soaks through the cloth at the point D into the small compartment F, where the bees get it, coming up from the hive through the opening at E.

On the very night after I had finished making this feeder I had a visit from the junior editor of GLEANINGS. In the morning we went out and put it on a hive. I carried the sugar,



and he carried the water and a quart cup. I put in 10 lbs. of sugar, and said to him, "Now put in four quarts of water."

"Why not put in five quarts?" said he. "H. R. Boardman has come to the belief that it is better to use equal parts of sugar and water in feeding."

"All right," said I. "Five quarts it is. H. R. Boardman is a pretty solid sort of man to follow. Very likely he is right."

I had thought I was pretty radical to use, for every 5 lbs. of sugar, 4 lbs. of water instead of two, the orthodox quantity; but it seems to work all right with equal quantities, and, as Doolittle would say, it's more according to nature, for nectar is pretty thin stuff.

I was anxious to have that feeder show off in good shape while Ernest was here; but the bees didn't touch the feed till I baited them in. Then they worked it in good shape, and in about 48 hours it was dry. I wish I had 40 like it. But I'll stuff in rags and make the old Miller feeders do.

Marengo, Ill.

[In my opinion, Dr. Miller has made what *promises* to be one of the most important improvements in the way of feeding, that has been made for many a year. Of course, the idea of using dry sugar, and pouring just simply water on it, to make bee-feed, is old. Years and years ago, the senior editor of this journal experimented a good deal, but he did not succeed in attaining satisfactory results. In all his experiments the sweetened water would be taken up by the bees, leaving the dry sugar to stick to the feeder. In order to get the bees to take up all the sugar, it required constant moistening with water. This took so much time and bother that he concluded it was better to pour boiling water on the sugar and make an actual syrup, the same to be poured into the feeders from a syrup-can. But Dr. Miller has taken a long step in advance, in what apparently is a success. That being the case, all he has to do is to carry the dry sugar and a pail of water; pour an equal quantity of each into the feeder, close the hive, and the work is done. You will observe he has simply adapted the percolator idea to the feeder; and herein lies the success of the plan.

We have been trying the plan outlined above by Dr. Miller, and so far we are pleased with it.

Although I saw the plan working successfully at Marengo on my recent bicycle-trip, when I got home one of the first things I asked our apiarist to do was to try this new way of feeding. I was in such a hurry that I could not wait to get common flannel, but asked him to go to the book-binding room and get some common cheese-cloth and poke it under the inside partition of the ordinary Miller feeder, as we make and use it. That you may understand a little better, I herewith show a cross-section of the feeder in question. The cloth was crammed



med in under the boards B, right where the arrows are coming out into the larger compartment; and it was crammed in tight enough so as to make the syrup percolate through it, in order to get into those narrow passage-

ways under A on either side. Well, what was the result? "All that my fancy painted it," in the language of Dr. Miller, where the cloth stuffing was properly put in. Where we failed to crowd the cloth in tight enough, some of the water escaped before it had incorporated very much sugar; but in all other cases the bees used up all the sugar syrup.

I forgot to tell you that we put into the feeders equal parts of sugar and water, and, of course, the syrup, as the bees got it, was thinner than they ordinarily get it—more like the nectar from the field.

As Mr. Boardman says in another column, this syrup will never granulate, because the bees ripen it; and right here I ought to credit Mr. Boardman with the idea of making the syrup of sugar and water, half and half. The fact that Dr. Miller was leaning the same way, only shows that great minds sometimes run in the same channel.

Without percolation, the water would not have time to take up the sugar sufficiently before the bees would have it taken down into the brood-nest. Well, when there is not enough water to take up the sugar, the latter simply dries, because the bees will take away the former in very short order. The cloth seems to prevent the water from escaping before it has had time to take up all the sugar; now, then, by putting in an excessive amount of water—that is, perhaps twice as much as is necessary for actual saturation, the sugar is more apt to dissolve, and, when dissolved, to percolate slowly through the cloth.

I had intended to prepare some illustrations; but the matter seems to be so very important that it ought to be given to our readers at once for what it is worth, and after all I think they will be able to catch on to the idea.

Perhaps the majority have not already in use the Miller feeder. Well, as Dr. Miller intimates above, you can secure the results by the use of a tumbler, a piece of cloth, and a saucer. But suppose you desire to feed faster, you have plenty of upper stories that you can put on to the hives. The same plan, perhaps, can be secured by using a gallon crock inverted over a piece of flannel, the whole set on a plate or large tin pan.

Later.—Since writing the foregoing we have tried three one-gallon crock feeders, inverted over several thicknesses of cheese-cloth on plates. So far as I can judge, the experiment seems to be a success; but instead of using flannel we used on one plate four thicknesses of cheese-cloth; on another six, and on another eight. The last mentioned seems to give the best results. In each crock was, of course, put an equal quantity of sugar and water by measure; and in 48 hours, when they were examined, the syrup was all taken out of two of them, and in the third a little yet remained. In what is regularly the bottom of the crocks was a slight residue of sugar still clinging. The water had probably settled away from it. This would make no trouble, because the crocks can be used on other colonies, or the same one if more feed is required, putting in more sugar and water as before. The slight residue of sugar still in the crock would make no trouble with a fresh supply. I hope others will try this experiment and report results. In the meantime we shall continue the experiments on a larger scale.

This plan of feeding by percolator feeders is a little slower—that is, it takes the bees about twice as long to get the same amount of feed as by the old plan, when syrup is given to them; but this is rather an advantage; the syrup, being thinner in the first place, is taken down more slowly, and will be ripened better.—Ed.]

NOTES OF BICYCLE TRAVEL.

By Ernest R. Root.

For my bicycle-trip I adopted the ordinary bicycle-suit—knee-pants, long stockings, and sweater—in preference to the suit of the ordinary civilian. While it made me look (or, rather, *feel*) a little odd in the presence of well-dressed people, you say, with me, that it was simply the exercise of good sense to dress for comfort and easy action rather than for *looks*. Well, in the writing of these notes I have felt that, possibly, the conventional cloak designed to cover up individuality, as well as a multitude of sins, and sometimes called the “editorial we,” was awkward for easy action here. So, in order to “sling myself,” or, rather, not feel hampered, I have decided to adopt, under this heading, the easy “bike suit,” or, what may be more properly termed here, the singular pronoun I. So much for preface.

On the morning of the 15th of August I left home for an extended bicycle-tour among the bee-keepers of Western Ohio and Northern Michigan, Northern Illinois and Southern Wisconsin. After a run of an hour and a half I found myself 20 miles on the way; and another hour brought me to the home of H. R. Boardman, some 12 or 15 miles further. I had sent a letter to friend B., at East Townsend, stating that I would be there on the morning of the 15th, but it seems I got there before the letter. However, I found him sitting in his hammock beside his apiary, apparently waiting for “something to turn up;” and it did indeed in the shape of a wheel-tramp, or crank-pusher, from Rootville. As usual, he was glad to see me, and we walked into the house. We each resumed easy seats, and then I explained that I was out to find, if possible, the right size of beehive—whether, indeed, the eight-frame capacity was sufficiently large for the average bee-keeper in the average locality, or whether it would be desirable to have a larger brood-chamber divided into sections, *a la* Heddon. Mr. Boardman smiled a little. Said he, “I doubt whether you will get a satisfactory answer to your question.”

“What do *you* think?” said I. Well, he did not know; but the Boardman hive, containing 9 frames, and a little larger than a foot square, answered his requirements.*

As if unable to *settle* this question for me, he turned quickly to the subject of feeding bees, along which he has experimented to a considerable extent. A year ago he had mentioned some experiments that he contemplated making; and now, twelve months having elapsed,

he was prepared to give me some interesting results. Said he, “Some tell us, that, to make syrup for bee-feed, sugar and water should be used in the proportion of 20 lbs. of the former to a gallon of the latter. Others say, mix in the proportion of two parts of sugar to one of water; but after experimenting ‘along this line,’ as Doolittle would say,” giving me a comical wink, “I came to the conclusion that the amount of water was too small; and now I make a syrup of equal parts of water and sugar.”

“Equal parts by weight or measure?” said I.

“It does not make any difference,” he replied. “Weight and measure are practically the same in this case.” Continuing he said, “I learned that syrup made in this proportion, fed to bees, would not granulate. Of course, it makes a thinner syrup, which the bees thicken to the right consistency, or, if you please, *ripen* it; and I never saw any of this kind of syrup that would granulate. Now, they used to tell us,” he continued, “that we must boil the syrup a long while in order to make sure that the sugar is thoroughly incorporated in the water; but I do not even do this. I just pour the water right on the sugar, and place the feeders at the entrance, as you saw on the hives as you came in. Again, some recommend putting in vinegar, and others honey, to prevent granulating. I never, with the ordinary thick syrup, could see that it did any good.”

I do not remember whether he regards it necessary to heat the water; but, if I remember correctly, he considered it of but little importance either way. Perhaps I may as well interpolate right here, that Dr. Miller had also been experimenting “along this line,” entirely ignorant of what Mr. Boardman was doing; and, strangely enough, he had arrived at about the same conclusion; but he put in four measures of water to five of sugar. He had found it was not necessary to even heat the water. He poured the sugar into the feeder, and then the water, and that was all there was of it. He found that, by making the syrup thinner, as did Mr. Boardman, the bees would ripen it better, and make a winter feed that would not granulate; and, secondly, it was much more convenient to prepare a syrup in this way. I will not say more of Dr. Miller’s feeding, because, under his own signature, in another column, you will find he has more to say on this, and I will refer our readers to that.

“I have learned another thing,” said Mr. Boardman, “and that is, it pays to feed; that it pays to give the bees a large amount of stores for winter, and then in the spring feed them enough to keep brood-rearing going at a lively rate. Yes,” said he, “I feed clear up to the honey-flow. If the crop is to be a short one, the brood-nest will be full of brood and syrup; and just the very day that honey is first stored, it will be crowded into the sections, just where

*I forgot to say at the outset, that I stopped a few minutes about four miles out, at the apiary of Vernon Burt. I put these same questions to him. Although he was using both the eight and ten frame Langstroth hives, he was rather of the opinion that the latter gave him more bees and more honey per colony.—E. R.

I want it. As the result of this I got a crop of honey while my neighbors all around me secured absolutely nothing. They took the ground that it was folly to waste so much money for sugar for feeding the bees when they brought no returns last year. But I took my chances, and, as a result, the sugar has been paid for several times over."

The syrup cost him, we will say, perhaps three or four cents a pound; and the honey he will sell will probably bring thirteen or fourteen. His neighbors' bees, probably, bee for bee, gathered just as much honey as his; but it all went into brood-rearing and the brood-nest. Mr. Boardman's all went into sections; and not only that, he had more bees as the result of the sugar-feeding, to gather the crop when it did come.

All of this was interesting to me; and, so to speak, I sat at the feet of Boardman as he went on to tell some more interesting observations. Said he, turning the subject slightly, "A good deal has been said 'along the line,' to quote Doolittle again, of bees gathering honey from only one source at a time. I believe there is a good deal in this. When food of any sort comes into the hive, especially if it is fed to them, the field-bees at once try to find in the fields the peculiar scent of this food. If basswood honey comes in, they will abandon the clover and hunt for the strong minty flavor of the linden. Why," said he, "at one time I put a little vinegar into my sugar syrup, in my earlier experiments, to prevent its granulating. This syrup I fed to the bees, and shortly the bees poured out from their hives pell-mell for the bung-hole of my vinegar-barrel, which was empty. They never before had shown a strong liking for that barrel. I was somewhat astonished, but at that time I did not know how to account for it. At another time, to prevent the wooden part of my feeders from becoming affected by the weather I dipped them in linseed oil. When they were dry I fed the bees from them as usual with ordinary syrup. At this time I was painting my house, and, quite to my astonishment, the bees showed a wonderful liking for the paint on the house—something they had not done previously, although painting had been going on prior to the time of soaking the feeders in linseed oil. The fact is," said he, "the syrup probably incorporated a slight flavor of linseed oil from the wood of the feeders. As soon as food was given to them they rushed out, as they always do when fed, to find the source of that peculiar flavor; and, of course, they found it on the freshly painted sides of the house."

It was now dinner-time, and I was given an opportunity to wash up after my dusty ride. While in the wash-room I heard Mrs. Boardman say, "Dear me! you will talk Mr. Root to death."

Mr. B. laughed, and repeated to me what his wife had said.

"Why," said I, "that is just what I came for; and Mr. Boardman seems to be so full of practical experience that I want to hear him talk."

"Yes," said she, smilingly; "but when he gets a going he does not know when to stop."

"Well," said Mr. Boardman, apologetically, "it is not often I have a chance to talk bees; and when one from Rootville comes I feel like letting him have all he wants."

At the table the subject turned to foundation-making, and I asked him if they had had any difficulty in making it, and how they managed to cleave the sheets from the rolls after they were run through; for beginners, and those who make foundation in a small way, generally have a good deal of trouble "along this line."

"We have no particular trouble. We simply cut off a little narrow strip, run it into the mill backward—that is, turn the mill backward—feeding the sheet in at the *front* side. This little strip is run in just far enough to leave about an inch sticking out. Into the *back* side we run a full-length sheet, turning the mill in the right direction. The end of this sheet sticks to the little sheet run in backward; and as it comes out on the other side an attendant pulls on the edge of the strip not embossed, and pulls out not only the little strip but the long sheet adhering to it, practically free from the rolls. In this way we run through all the sheets. I discarded the long laborious job of picking the sheets, to say nothing of scratching the faces of the cells."

Perhaps I might remark, in passing, that, as foundation-makers, we have no particular trouble. Our mills are all geared to power, and, of course, they can not be run backward very well. The sheets are run in in the usual manner; and if every thing is in right shape, the temperature of the water right, from which the sheets are taken, and the mill right, the sheets will cleave with very little trouble; but I have given that little kink of the trade, not because it is particularly new, but because it may be valuable to many who are making foundation in a small way.

After dinner we went to the apiary, where Mr. Boardman explained the construction of his feeder. He feeds almost entirely from the entrance, and very successfully too. Although there was no honey coming in from the field, the bees were very quiet and peaceable; for Mr. Boardman was still feeding slowly for winter use. I do not know whether he is ready to describe his feeder or not; but I have asked him to explain it when he feels that he has it fully perfected. As an entrance feeder I believe it is the best one I have ever seen. It certainly works beautifully in Mr. B.'s home yard.

"Here," said Mr. B., advancing toward the end of his winter repository, "is where I feed the bees water—just clear water. This effectually disposes of the trouble of bees drinking at troughs and annoying horses."

On a large shelf was quite a row of his feeders containing nothing but water, and the bees were patronizing them in great shape indeed.

"Now," said Mr. Boardman, "I want to show you how my bees are building comb, for I see you have illustrated comb-building, by Mr. Hutchinson. I can show you the same thing right here."

So saying, he proceeded to light the Crane smoker.

"By the way," said I, "how do you like it?"

"It is a splendid smoker. At first I thought it a great awkward thing, and did not believe it would suit me at all; but now I like it better than any thing else I have seen. It has the capacity and the blast."

I then asked him if the rubber, the flexible part of the bellows, gave him any trouble.

"Not at all."

"We have had one or two complaints," I said, "and I am interested in knowing how it is doing. The use of rubber in place of leather is quite an innovation, and we used it because it was recommended to us by a bee-keeper who had used it for four or five years. It is more flexible, more impervious to air, and is less affected by dampness or water."

"Yes," said he, removing one side of one of his hives, "you will notice I do not have to handle a single frame. The bees have done all that comb-building within the last two days, and all under the stimulus of syrup-feeding, as you see."

Yes, indeed, there was a fine lot of combs building, and all worker too.

"Oh, say!" said I; "I ought to be going; but I want to know whether you have been using fixed distances."

"Yes, sir, I have—that is, I have been nailing strips on the sides of my ordinary brood-frames, making them something like the Hoffman. But I yanked them off. No, I must say I do not like fixed spacing for me."

"Well, how about the burr-comb question?" said I, putting another one at him.

"Well, I am not bothered very badly with them, and I get rid of their nuisance largely in this way: I space the frames closer together."

"What spacing does that make?"

"Somewhere about $1\frac{1}{2}$ from center to center. That, you see, is slightly less than $1\frac{3}{4}$."

He showed me that there was a decrease of burr-comb building on hives where close spacing was practiced, as against those where the ordinary $1\frac{1}{2}$ or $1\frac{3}{4}$ spacing was used.

"Say! I must be going," said I. "How far is it to Toledo?"

"Sixty-five miles."

"Whew!" said I; "I have got to make it to-night." And then I mounted the wheel. Mrs. B. looked a little doubtful. I had previously told Mr. B. that I could not stay more than an hour or so; but his talk was so interesting and profitable, and dinner smelled so good in the

other room, I could not well resist; and after dinner there were so many interesting things that he had to tell me, that I stayed longer than I expected. I finally mounted the wheel, feeling that I had had a profitable visit. I made a rush for Norwalk. I arrived there in fair time. Another spurt of five miles brought me to Monroeville; and another spurt made me feel pretty much like sitting down, for I had struck quite a little sand. I was sweating and puffing away, and at my left I saw a wheelman fussing with his wheel. Evidently something was wrong or broken.

"Sand rather bad," said I, and passed on. As I did so I felt as if I was not acting the part of the good Samaritan in helping a brother-wheelman out of his trouble; but I had not gone far when he caught up, puffing like a steam-engine, and telling me his wheel ran hard.

"My!" said I, "any wheel will run hard in this sand."

"Well, that may account for it."

In a moment more I heard his chain going clickety-clack.

"Here," said I, feeling more like the good Samaritan, "let me fix that."

I quickly unbuckled my bicycle-satchel and drew forth a package of chain-lubricant and rubbed it on, and, presto! how much better it did run!

"Now," said I to my friend, "go ahead a little and I will trail and see whether your chain, or, rather, sprocket-wheels, are out of line." Yes, sure enough, they were.

Again the good Samaritan dismounted and helped his friend to change the adjustment on one side of the wheel.

"There," said he, after we had resumed our journey, "the wheel runs a hundred per cent better—thanks to you. Who are you, and where are you from?" said he.

"My name is Root, from Medina. Where are you from?" I said.

"Oberlin."

I soon found that my friend knew some of the old professors under whom I had studied; and we fell to talking about Oberlin, about this and that teacher, this and that building, and before we knew it we were at Fremont, where my friend stopped. It was getting toward dark, and I was told it was 35 miles to Toledo yet, and there was a good deal of sand to get over. That being the case, I decided to take the train. Fortunately one would be in in about an hour. I sat down at the depot, mopping off the sweat, and wondering whether or not Dr. Mason would be at home.

Continued in our next.

We have enjoyed a flying visit from Mr. S. T. Pettit, of Belmont, Ont., one of Canada's veteran bee-keepers. He is fortunate in being grandpa to the Holtermann quartette, the rising junior editors of the *Canadian Bee Journal*, whose pictures appeared recently in this journal.



REARING QUEENS IN LARGE BROOD-CHAMBER.

Question.—I use a large one-story hive holding 18 frames, running parallel with the entrance, so I can not very well raise queens in an upper story by the plan given in your book. How would you proceed to rear queens in such a hive as the one spoken of above?

Answer.—Your hive is very similar to the one which I used when the plan of rearing queens in a hive having a laying queen in the same came to my vision. I had made four hives on the "long-idea" plan, which was brought to public notice some years ago by D. L. Adair, of Kentucky. These hives were used a few years for extracted honey, and laid aside, inasmuch as I found that it was easier to produce extracted honey by the tiering-up plan. Soon after D. A. Jones, of Canada, came out with his new plan of raising comb honey, as I gave in *GLEANINGS* a few months ago; and these long-idea hives proved to be just the thing to try the Jones experiment with. I changed the combs and bees from my regular hives back into these hives again, put in the two queen-excluding division-boards, so as to shut the queen on five frames in the middle of the hive, according to the plan, when the first thing which came to my notice in opening the hive a week later was sealed queen-cells wherever there was any unsealed brood left which the queen did not have access to. These I carefully removed, till there came a time when work crowded so that the removing of these cells was neglected till they hatched, went out of the hive, and were fertilized and commenced to lay, so that I had two laying queens in these hives. It will be remembered, from what I wrote a few months ago, that there were wide frames of sections between the combs where these cells were reared and the queen-excluding division-boards which kept the young queen in her place, and these wide frames had separators on them which tended to keep the young queen from going to the perforated zinc and quarreling through it with the old queen. As I soon became disgusted with the whole plan of long-idea hives, either for the production of comb or extracted honey, the upper-story plan was used as given in my book. But I have found, from long experience, that, wherever there is unsealed brood on which the bees cluster, but from which the queen is excluded by means of perforated zinc, enameled cloth with a hole or two in it, or a division-board with a crack in the same, the bees will build queen-cells on these combs; and if it is so that the young queen hatching from these cells can not "touch noses" with the old queen, and if there is a

place of exit from the part of the hive in which this queen hatched, she will in due time become fertile, and go to laying, the same as she would if there were no other queen in the hive. Hence to rear queens in such a hive as our correspondent uses, all we have to do is to fix the same so that two or three combs of brood can be set in one end of the hive; and between these combs of brood and the apartment having the laying queen, put two queen-excluding division-boards, these latter being half an inch or more apart, so that the queens can not touch each other. From past experience, my way of fixing such a hive would be to keep the laying queen in the rear end, on as many combs as I wished her to occupy, placing next her apartment a queen-excluding division-board. I would now place two empty combs next this division-board, and immediately in front of these put in another queen excluder. I would now fill out the remaining space between the last excluder and the front end of the hive, or entrance, with combs of brood and honey, and raise queen-cells there, and have them fertilized from the same, as I gave in my book. Now, while I have told what I would do when using such a hive as the correspondent says he is using, yet I feel it is my duty to say that, in a locality like Central New York, such a hive is not the one for the practical bee-keeper to use if he wishes to produce the most honey with the least capital and labor.

FEEDING WHEN REARING QUEENS.

Question.—When you rear queens in the fall of the year, or at any other time when the bees are not getting honey from the fields, how much do you feed each day, and how do you feed?

Answer.—I feed about a pint a day, or enough so that the bees will store considerable in the combs and start to comb-building, which will be shown by the bees beginning to lengthen unsealed cells, the same as they do when honey is coming in moderately from the fields for a few days. All should know that comb-building does not start at once, as soon as the bees are fed, or as soon as they begin to get honey from the fields; but in three or four days after sweets are obtained, wax secretion begins, and the combs begin to show the same. If the colony is very strong in numbers, more should be fed; for a pint of feed would be hardly sufficient for all hands to obtain a taste were there from 60,000 to 80,000 bees in the hive.

For feed, I make it the same as for winter feeding; namely, 15 lbs. of water put into a suitable vessel, and set over the fire till it boils; then slowly stir in 30 lbs. of granulated sugar, so that it shall not settle to the bottom of the vessel and burn (as granulated sugar is quite apt to do if not stirred) while pouring in, and the whole brought to a boil again. Now set from the fire and stir in 5 lbs. of extracted honey; or honey in the comb will do just as

well, but it is more expensive, and you will be to the trouble of removing the wax, else it will not work well in pouring into the feeder. This is for winter feed, and I always make it this way, as this will keep the year round without souring or candying or crystallizing. Now take of the feed the amount you require for one feeding, and add a third in bulk of cold water, stirring a little to mix, when it is of the right temperature and of the right consistency to feed for queen-rearing. Each time after this, when the feed is cold, you will take the same amount of hot water, stirring this in to the amount needed for one feed, thus giving the right temperature and consistency again. When I say that thin warm feed gives the greatest possible stimulus to bees for brood-rearing, while such feed will soon sour if left standing in a dish, it will readily be seen why the advice above is given, without further multiplication of words. For a feeder I use a division-board feeder, the same as I described in GLEANINGS a few years ago, and the same as is described in my book; but the illustration given in my book is that of Prof. Cook's feeder, and does not correspond with the description at all. If you make a feeder according to the directions given, paying no attention to the illustration, you will have just such a feeder as I use. But this matter of feeders is not at all important. Any dish or feeder from which the bees can take the feed without being drowned or enticing robbers will answer all practical purposes.



THE WILLIE ATCHLEY CELL-CUP PLAN.

I see by GLEANINGS that Mr. Doolittle does not make a success of my way of grafting queen-cells. I send you by this mail two cells that queens have hatched from. See the old cocoons still there. If he will make his colonies broodless and queenless for 48 hours, then put in wax cells, he will find a great difference. I can not succeed in getting *all* good queens by any other method. If larvæ two to ten hours old are used, and good strong colonies when honey is coming in, or feeding, it is bound to succeed.

WILLIE ATCHLEY.

Beeville, Tex.

THE N. A. B. K. A. ON THE WEST SIDE OF THE MISSISSIPPI; FREQUENT SHOWERS IN ILLINOIS.

Didn't we have a session of the N. A. B. K. A. at Keokuk, Iowa? and is it not on the west side of the Mississippi River? I think Mr. Benton was not there. Don't you remember that the business men of Hamilton sent carriages to bring us across the river to the Dadants?

The bees are not going to send me to repre-

sent them at St. Joseph this year. This is the fourth poor year for honey, and they can not afford it. Last Friday night, Aug. 24, the bees held a grand concert, the first one of the season, and have continued them since. There have been frequent showers during the last fortnight, and the fall flowers in the Illinois River bottoms are blooming. The lands along the river, subject to overflow, are very rich, and Spanish needles, asters, polygonum, and other fall flowers, grow luxuriantly.

Peoria, Ill.

MRS. L. HARRISON.

[Yes, we had several sessions on the west side of the Mississippi, and this fall we hope to have several more at St. Joseph; moreover, I hope those naughty bees, or, if you prefer, naughty seasons, will not keep you away from a good convention which we expect in Missouri.]

When I was in the northern part of your State on that recent "bike tour," I saw not a drop of rain nor any signs of any having fallen for weeks. If I could have been convinced that you had good roads and lots of rain, and could have known, as I now know, of the poor roads in Southern Wisconsin, I verily believe I should have turned that wheel southward. However, I do not regret the hard hill-climbs of that State when I think of the kind reception received in the homes of a few of the Wisconsin bee-keepers.—Ed.]

A CORRECTION.

On page 703, line 12, column 1, you have "The Champion was originated from Soto 30 years ago." Please correct. It should read, "The Champion was originated from 20 to 30 years ago." The mistake is probably due to my bad writing.

CHAS. MOMM.

Irvington, N. J., Sept. 4.

[The mistake was due to the fact that the writer ran the two words together so as to look exactly like a name. The matter was submitted to our best readers, who concluded that "Soto" was meant. This matter of running words together in writing causes an endless amount of difficulty in reading manuscript. Another common fault is to separate words, causing the syllables to look like words. We take great pains with every line we print; but sometimes the ingenuity of a bad writer is too much for us. As a whole, friend Momm's writing is much better than the average; but as he did not make a good 20, nor lift his pen when he made a bad one, a blunder was occasioned.—Ed.]

DO WORKER-BEES TRANSFER HONEY TO YOUNG BEES?

Some time ago I read how bees gave up their honey to the young ones that were too young to fly. I can not think it is correct—at least, not always. First, why should the Creator of all overlook the first principle which is contrary to all our domestic creatures? They all either idle away their young days or else play. Now, if bees do go to the trouble and time of using the nectar twice, how is it with a new swarm of all old flying bees, which always work with such vim? I have always noticed, as I remove quilts from sections or extracting-combs, that almost every bee is an old one—scarcely any

young there. But on frames of brood there are always many. If I am in error I wish to be converted to the right side. We are all easily led into error—at least I am.

Hallowell, Me., Aug. 24. E. P. CHURCHILL.

[I refer this question to Mr. Doolittle, who is one of those who hold that the field-bees transfer their loads of nectar to the young bees.—Ed.]

SUCCESS WITH THE WILLIE ATCHLEY CELL-CUPS.

In GLEANINGS, April 15, p. 330, G. M. Doolittle wonders how many have made a success of Willie Atchley's plan of raising queens. I have made a success of it, but I tried a good many times before I did so; and, like Mr. Doolittle, I had them rolled to the entrance. I was pretty near giving up in despair. I think that making the cell-cup stick just right has a good bit to do with it. I made mine by Willie Atchley's directions, but I made the worker-cell a trifle larger; but if any one goes by his stick he will not be far out. I find that, the older I get the comb, the better the little cups will lift out. I tried combs that were not very old; but they stick too tight, and tear. I have raised a few fine-looking queens by this plan, and hope to raise more next summer.

I should like to ask Mr. Doolittle this question: Can a five-banded queen be bred, or a queen whose bees are five-banded, from pure Italian queens? F. Low.

McLaren Vale, South Australia. June 23.

A GOOD WORD FOR THE PELHAM MILL.

Referring to the suggestion of R. C. Aikin, July 15, to obviate the inconvenience caused by the end of the sheet adhering to the dies of the roller in making foundation, I would say the Pelham mill "gets over" the whole difficulty by means of a very ingenious and highly satisfactory device; and while the mill is sold at a low price, a thorough test of hundreds of pounds of Pelham foundation has given the utmost satisfaction—the only precaution necessary being to wire full sheets to prevent sagging. This, however, is imperative, owing to the unique construction of the septum.

Titusville, Pa., July 20. H. E. HILL.

DEAD BROOD; ITS CAUSE AND CURE.

I have had several cases of the new brood disease, which at first I decided was foul brood. For some cause one colony that was affected superseded its queen, and I found every thing cleaned up in nice shape before the young queen commenced to lay. I then made the other affected colonies queenless, and returned the queens as soon as the bees had cleaned up nicely, which they did in every case.

NATURAL-COMB BUILDING.

I tried having the bees build combs in wired frames with inch starters, and had very good

success. I think that, where we want to give only starters, the wires will prevent combs from being bulged. I have had very nice combs built that way. J. LAWRENCE.

Dallas, Tex., Aug. 25.

[Removing the queens in the case of dead brood may or may not effect a cure. In a large number of cases the disease, if such it be, went off of itself without any thing being done. Again, we have tried taking queens from colonies having a few cells of dead brood, and the disease not only went away from the affected colony, but the one to which the queen was given remained healthy. Prof. Cook thinks feeding cures; but if he had done absolutely nothing, I believe the disease would have disappeared itself just the same. So far I incline to the opinion more than ever, that overheating is the cause.—Ed.]

STINGLESS BEES IN COSTA RICA.

I beg to add the following statement to the remarks of Mr. Chas. Norman, in GLEANINGS, p. 511, on stingless bees:

In Costa Rica there are about five known kinds of stingless bees; but only two of them are valued for their honey, and are kept for that purpose in rough logs hung down alongside the verandas. One sort, called "jicote" (he-co-tay), is a handsome bee, nearly of the size of a German bee. Its color is a brilliant black, with five very narrow golden bands, which, to be discovered, need close attention; hence its general appearance, which at first seems to be a brownish yellow, as compared with the bee of Yucatan, which probably is nothing but the same jicote, common all over Central America. The jicotes build circular combs, with small hexagonal cells for the brood, and large pockets of a blackish wax for the honey, which is taken off once every year. I always keep some logs with jicotes in the midst of my apiary of Italians; but all my trials to get them to work in a more civilized fashion in my Dovetailed hives proved useless; neither have I much hope that some day hybrids may result, as the queen of the jicotes is very distinct from her majesties of other races, her abdomen being a large snow-white ball, full of eggs.

The other sort of stingless bees, called "mariaseca," is rather scarce, but celebrated here for its delicious honey, although to my taste it rather resembles Italian honey mixed with some syrup and plenty of water. The mariaseca bee is exceedingly small—scarcely larger than the head of an Italian drone, and it is leather-colored. Although in appearance the mariaseca seems to be very distinct from the jicote, its way of building brood-combs and honey-bags is nearly identical, except that the wax is leather-colored, and that every thing has much smaller proportions.

RICHARD PFAU.

San Jose, Costa Rica, C. A.

[I am glad to get this, because it is evident friend P. knows whereof he is writing.—Ed.]



THE senior editor expects to be at the St. Joseph convention, Oct. 10, 11, 12.

THE last issue of the *Canadian Bee Journal* gives a picture of President E. L. Goold, of the Goold, Shapley & Muir Co., Ltd., of Brantford, Ontario. We are glad to see the face of the head man of the largest manufacturing concern of bee-keepers' supplies across the border.

THE *American Bee Journal* keeps on improving. This time the new feature consists in putting the department of contributed articles into double-column leaded matter. As such it is very readable, and looks well. The other matter, and shorter items, still appear in two columns to the page as usual.

THERE was a young miss up in Michigan (if she is not already a bee-keeper I think she will be) for whom I formed a strong attachment; and that attachment seemed to be reciprocated on her part. Who was it? you ask. Why, it was baby Fern, of the *Review* office. Perhaps I will tell you more about her at another time.

I AM glad to tell you that Dr. Peiro, who writes those interesting talks, entitled "Doctor's Hints," in the *American Bee Journal*, is veritable flesh and blood, and is writing under his own name, and not under a *nom de plume*, as many have imagined. He is a neighbor of Bro. York, and, like him, one whom it is a pleasure to know. Dr. P. and Dr. Miller are a good deal alike in some respects, and it would be fun to see them at convention together some time; for Dr. P., if you must know it, is becoming interested in bees. More anon.

THE following is an editorial that appears in the *Bee-keepers' Review*, and we indorse it most heartily. If we are going to give credit, why not give it in full?

Full credit is the thing to give when copying an article, or even reproducing an idea, that has appeared in another journal. I have more respect for the man who has the audacity and effrontery to steal an article right out and out, and palm it off as his own, than for one who will slyly label his quotations, "An Exchange," "A Western Journal," "An American Journal," and so forth, thus avoiding giving credit to a rival journal. If an article or idea isn't worth giving full credit for, it isn't worth copying.

PROF. COOK writes that he has destroyed every vestige of the new bee-disease (dead brood), simply by feeding. In case the feeding has any thing to do with it, I should be inclined to believe that probably it was not so much due to starvation as to improper food or food slightly poisonous. In our own case, the disease appeared at its worst during a heavy

flow from basswood. It is possible that the bees were gathering at the same time something that disagreed with the larvæ, and in some cases caused them to die, resulting in what we have seen in some apiaries—dead brood.

"A MASQUERADE of Stamens" is the title of an article in the September *Cosmopolitan*, in which the writer, Mr. W. H. Gibson, speaks thus of the relations of the bumble-bee and red clover: "This bumble-bee is as necessary a part of the plant's life as are its leaves and petals. The flower has decked itself in beauty and fragrance for his coming, and blushes for him alone. Its nectar is provided with sole thought of him, and its pink portals are framed to welcome him, above all other insects." And the red clover is but an example, he says, "of this law of vital communion and interdependence between the flower and the insect." The whole article is delightfully written, and makes capital reading for those who are interested in knowing the part played by insects in the fertilization of flowers (or fruits).

THAT EDITORIAL "WE."

I AM mad—yes, as mad as can be. What about? Why, under that editorial "we" I find that A. I. R. is being clubbed for some of my editorial sins; and I am madder still because he also gets credit for some editorial felicities that once in a while escape my lips or from the point of my well-worn pencil that I push some. I am going to put my full name at the head of this department hereafter; and when A. I. R. writes any thing under this heading it will be, as heretofore, signed by him. As I said elsewhere, the editorial "we" covers up a multitude of sins, and that multitude is heaped on the senior editor, who is not to blame at all.

It may be a little hard for me to drop the conventional "we;" so if you see it stuck in editorials hereafter, promiscuously along with the singular pronoun, don't be surprised.

Say, Dr. Miller, you remember you gave Mr. Hutchinson, of the *Review*, a pound of figs for dropping "we" to "I."

"BRACE-COMBS AND THEIR ADVANTAGES."

THE above is the subject of an extended article by G. M. Doolittle, in the *American Bee Journal* for Aug. 30. He holds that bees need them as ladders to the supers. Why, he would not have thick top-bars for 50 cts. a hive; and yet there are thousands of bee-keepers who would be willing to pay 50 cts. per hive to have them, to dispense with the nuisance of these same burr-combs. In the very next number of the *American Bee Journal* there is a well-written article from Mr. H. E. Hill, telling of his disagreeable experience with burr-combs, of bee-killing by the thousands, of dripping honey, and the difficulty of removing a lot of supers from hives within thin and narrow top-bars. After speaking of the large amount of

unnecessary time occupied in removing those supers, he says, "Narrow, thin, and V-shaped top-bars are still in use in some of the large apiaries, for some unaccountable reason, though I know of no one of experience who is making additions to his grief by extending the number already in use." There are plenty of apiarists, we think, who would be willing to testify that they see no difference in the readiness with which bees enter supers over non-burr-comb frames, or supers over thin top-bars with burr-combs, providing, in the case of the first mentioned, small bee-spaces of $\frac{1}{4}$ inch are used. For such spaces I can not imagine why bees should want "ladders" to climb into the sections, any more than the good wife wants a ladder to get into the pantry. This same Mr. Hill, above mentioned, in telling of his experience in removing 800 or 900 comb-honey supers, tells of the warping and sagging of the top-bars $\frac{3}{8}$ inch thick, and how the supers "clung to the top-bars with a deathlike grip," so that a "small crowbar was necessary to start them," and how "each one dragged with it from one to ten brood-frames." And further on he says, "Bees were killed by the thousands by forcing uneven and bulged combs up with the supers. Every thing was drabbled with honey, even the wheelbarrow, and bushels of brace-combs were scraped from the frames and super-slats." This is only the experience of thousands of others. On my recent visit to Dr. Miller's he told me that, if for no other reason, he must have thick top-bars because of the cleaner honey which they give.

I don't like to take issue with my friend Mr. Doolittle; but he is recognized as such good authority that many, I fear, would follow his teachings, and only be led into the experience as above given.

THAT BICYCLE-TRIP.

FROM Manistee, Mich., I went to Lake Onekama, where I met Walter Harmer, formerly of Manistee, the one famed for his small sections of honey, ranging from one to two ounces in weight. From that point I went by steamer to Chicago; called on Bro. York, of the *American Bee Journal*, and after a visit of two or three hours I pushed the wheel to Marengo, getting lost on the way, and making over 80 miles in the afternoon and part of the evening. The actual distance was only 65 $\frac{1}{2}$ miles. From Dr. Miller's I pushed the wheel again westward and northward, finally arriving at Browntown, something over 100 miles. Here I met J. R. Reed and Harry Lathrop, both of whom have written at various times for these pages. From Browntown I took the train for about 40 miles to E. France & Son's. It was so very hilly and sandy in spots that I was tired out. From France's I came back to Chicago by train, having had enough of the hilly and sandy roads of Southern Wisconsin. Again I met Bro.

York, continuing the visit of the previous week. Now that I have arrived home I can not refrain from giving the last paragraph of a private letter just received, which I feel sure my friend "George" will not object to having appear in print right here. Such chunks of friendship ought not to be hid under a bushel.

I've been so glad that you came to see us! I've told Dr. Miller that he can't have you all to himself any more, for I'm going to claim at least a part of you for myself, "and don't you forget it!" —

"BY GEORGE."

After leaving York's I took a train for Toledo. From that point I resumed the wheel to Medina — the last day making 110 miles in 9 hours.

Now, then, you have an outline of my visit. The first installment of Bicycle Notes is given in this issue, and will be continued until I have told you of all the good things I picked up on the way.

Perhaps it may be well for me to state right here that I felt greatly honored by the cordial and hearty welcome I received at the homes of the bee-keepers where I stopped. I have received so many courtesies that I do not know how it will be possible for me to ever repay them. I meet with a great many classes of people; but I do not believe there are any nicer folks in the world than bee-keepers. Their study of the works of Nature (and Nature is God) seems to ennoble them, in my humble estimation, above the average of their fellows. I am well aware that I have had to skip the homes of many bee-keepers who would have made my visit just as pleasant and profitable as those where I stopped. But limited time is my only excuse for not stopping at all places on the route; and there are quite a number of "leading lights" I had to pass by entirely.

BEE-MOTH; ITS RavAGES; NOT A SERIOUS ENEMY IN THE UNITED STATES.

We have received several copies of the *Agricultural Gazette*, published by the Department of Agriculture of New S. Wales. Those that have come to our office have contained much of practical value to the farmer. In the April number there is an excellent article on bees-wax-moths, by Sidney Olliff, Government Entomologist for New South Wales. Along with this is a beautiful lithograph plate showing the work of the moths upon the comb, their larvæ, and the moths themselves, etc. As the lithograph was the finest and the truest to nature of any thing I had ever seen I had it reproduced in half-tone, and take pleasure in presenting herewith the result together with a part of the article referred to above.

I find that authorities in this country refer to two kinds of bee-moths—the large and the small. As the scientific names are the same as those above mentioned I feel sure that our own bee-keepers will recognize their "old friend the enemy," in the plate. Of course,

you will not forget to observe that the drawings are greatly enlarged. The horizontal lines just opposite give the life size, which, so far as I remember, corresponds to the size of the same species in this country.

The Italians are so thoroughly disseminated in this country that the wax-moth, so far from being an enemy, may be regarded more as a curiosity; and at the present time it bids fair to become extinct. In Europe, and especially in England, I believe black bees predominate, and hence bee-keepers across the water have more trouble with the bee-moth, and are more concerned with methods of exterminating these pests than we are. Italians are making rapid headway in Australia, and we naturally expect that they will soon cause the bee-moths to become a thing of the past, as they are practically in this country.

It is not safe, however, even here to leave combs exposed for any great length of time from the bees. If we have any left over during the season they are kept in a tight box or room, said box or room having been subjected to a temperature near the zero-point during the previous winter for a considerable length of time; for long and severe cold kills the eggs and larvae; and if the compartment in which the combs are is kept tight thereafter, there will be no danger of wax-moths.

The bee-moths, or beeswax moths, of which there are two distinct kinds commonly found in Australia, are so well known, and have been so frequently figured and described, that it will not be necessary to give very detailed or technical descriptions of them here. A considerable number of inquiries have been received during the past two years regarding these destructive moths, chiefly from amateur bee-keepers; and it may, therefore, be useful to publish a few notes concerning the habits and seasonal appearance of these insects in Australia, more especially as I am able to add some information regarding remedial and preventive measures for the suppression of the pests, which have been found satisfactory by experienced bee-keepers. The larger of the beeswax-moths—properly known as *Galleria mellonella*, Linn., but sometimes called by the name *Galleria cereana*, Fabr.—appears to be by far the more destructive of the two insects. It is a very widely distributed species, being found throughout Europe and North America, in India, and even in the cold regions of Northern Siberia; indeed, it appears to have a range that is co-extensive with that of the bee-hive itself. In warm countries it is much more abundant, and therefore destructive, than in temperate or cold climates, a fact which is probably accounted for by the varying number of broods or generations which occur in a season under different climatic conditions. With us in New South Wales the first brood of moth appears in the early spring from caterpillars which have passed the winter in a semi-dormant condition, within the walls of their silken coverings, and only turned to pupæ or chrysalids upon the approach of warm weather. These winter (or hibernating) caterpillars feed very little, and usually confine their wanderings to the silken channels which they have made for themselves before the cool weather sets in. Upon the return of the desired warmth the caterpillars spin a complete cocoon for themselves and turn to the chrysalis stage, and in from ten days to a fortnight the perfect moth appears. The moth then lays eggs in any convenient spot, such as the sides and bottom of the frames, on the walls of the hive itself, or on the comb. In each case I have had an opportunity of observing the process, the moth chose the sides of the frames, as near to the brood-comb as possible, the young larvæ having a decided preference for

this comb. The larvæ having once made their appearance, which they usually do in from eight to ten days after the laying of the eggs, their growth is exceedingly rapid, the average time before they are ready to assume the chrysalis stage being only some thirty days. The average duration of the chrysalis period is about a fortnight, so it can easily be seen with what great capabilities for rapid reproduction we have to deal. As we have said, the number of generations, or broods, which develop in a season, i.e., between early spring and late autumn, varies with locality and climate, but it may be worth while to record that, in my opinion, we have sufficient evidence to prove the existence of four broods in the Sydney district under ordinary circumstances. I have myself bred three generations, or broods, from a comb received in early spring from the Richmond River; and I am convinced that a fourth might have been bred from the same stock but for an unfortunate accident to the eggs obtained from my third brood. Upon first hatching, the larvæ is p.l.: yellow in color, with a slightly darkened head; and, when full grown, it is of a dull grayish flesh color, with a dark reddish-brown head. Its average length is about an inch, and, like the majority of the caterpillars of moths, it has sixteen legs. The chrysalis of the larger beeswax-moth is of the ordinary type, and it is inclosed in a very compact cocoon or tough white silk, usually spun up in one of the silken channels or galleries made by the larva which we have previously referred to. The perfect insect, or moth, has reddish brown-gray forewings, which are distinctly lighter in color toward the outer or hinder margins. The sexes may readily be distinguished by the outline of the wings, as will readily be seen by a glance at the plate accompanying this article.

The second species of beeswax-moth is known as *Achraea griseola*, Fabr., the lesser beeswax-moth, or honey-moth, etc. Although not nearly so destructive as the larger kind, it does considerable damage in old and neglected hives. The moth is much smaller than *Galleria mellonella*, with which, by the way, I have found it associated in the same hive on more than one occasion. It is of a dead gray color, with a yellow head. This species is not nearly so particular in choosing its food as the former kind (*G. mellonella*), and may frequently be found feeding on the debris which commonly collects on the bottom of a neglected hive.

It is a well-known fact, that the beeswax-moths do not attack the Italian (Ligurian) bee to any serious extent; indeed, they are rarely attacked at all. It is the ordinary black bee or hive-bee that suffers so greatly.

In conclusion I would express my thanks, among other kind correspondents, to Dr. Dagnell Clark, the Rev. John Ayling, and Messrs. Abram & Riddell, who have been kind enough to forward to the Department specimens or information.

So far as I am aware, very few recognizable figures of the bee-moths have been published, so that the plate attached, from the pencil of Mr. E. M. Grosse, will doubtless prove very acceptable. With the exception of an excellent wood-cut in Dr. Taschenberg's "Die Insecten" (Brehm's Thierleben, Vol. IX., p. 432) of the larger species, I have not been able to find a figure showing the stages or habits of these moths.

EXPLANATION OF PLATE.

BEE-SWAX-MOTHS.

- Fig. 1.—Larva or caterpillar of Larger Beeswax-moth (*Galleria mellonella*, Linn.), side view (much enlarged).
- Fig. 2.—The same viewed from above (much enlarged).
- Fig. 3.—Cocoon of same, extracted from bee-comb (enlarged).
- Fig. 4.—Larger Beeswax-moth (*Galleria mellonella*, Linn.), male (much enlarged).
- Fig. 5.—Forewing of same, female.
- Fig. 6.—Larva or caterpillar of Lesser Beeswax moth (*Achraea griseola*, Fabr.), side view (much enlarged).
- Fig. 7.—Pupa or Chrysalis of same (much enlarged).
- Fig. 8.—Lesser Beeswax-moth (*Achraea griseola*, Fabr.), (much enlarged).

In the background, above, a comb from a frame-hive is represented, showing brood-comb tunneled by the larvæ of the Larger Beeswax-moth (*Galleria mellonella*, Linn.).

The natural sizes of the insects are indicated by hair-line.



I will have mercy, and not sacrifice.—MATT. 9:13.

In a recent issue (p. 557) I alluded to the fact that, a good deal of the time, our laws are not enforced—that transgressors are beginning to presume that they can escape penalty, especially if they have money to back them; and that, after a man is convicted and put into prison, if he has money his friends can get him pardoned. Well, there are a good many people who are just now demanding that our laws be enforced. They say that, when a man is found guilty, he should be punished to the full letter and extent of the law; and that the great reason why crime is on the increase is because of a foolish weakness on the part of so many of our people, leading them to believe that the law is too severe or too hard; and that, after a criminal has been punished just a little while, he should be pardoned out. Of course, there are abuses along this line, and very likely there is a good deal of foolishness or foolish sentiment in taking the part of criminals, and screening them from justice; but we should bear this in mind—circumstances alter cases. I mentioned the fact that it was said that foolish women sent bouquets of flowers to the assassin of the mayor of Chicago. Now, there are those who go so far in their condemnation of this thing as to say that the whole matter of visiting prisoners in jail should be stopped. A part of their punishment is to shut them up without companionship. The way of the transgressor should be *made* hard, etc. This class of people are very likely to say that, when a man commits a crime, and gets punished, it is good enough for him; and the sooner the whole world learns that punishment *inevitably* follows crime, the better for all concerned. Now, that is all very right and proper, providing we do not push it too far. As I have said, *circumstances* alter cases. A good and wise judge and jury consider the circumstances carefully in rendering their decision. For instance, "Is this the prisoner's first offense, or is he an old and hardened criminal?" The crime committed may be the same in both cases, but we should *carefully* consider the circumstances.

Years ago, on these pages I told you of a young man I found in our county jail. He had been in the penitentiary once, and was on his way there again for the same offense. Through God's mercy, however, he became converted. I had visited him in jail for several months, and had become intimately acquainted with him. Through my advice he not only pleaded guilty, but he confessed his crime so honestly, and in such a manly way, that even the judge himself was moved. It was years ago, so I can not remember exactly what he said; but it was in substance something like this:

"Gentlemen of the jury, we send boys to the penitentiary because we think it will be the best thing for them—because it will be the *only* thing that will teach them to do differently. I am satisfied that *this* young man will lead a different life, even if he is not sent to prison at all."

The judge overhauled the law, and in a little while decided that the prisoner need not be sent to prison at all. In a few days his prison-door swung open wide. True to his promise he held fast to his new-found Savior. He commenced at once going to Sunday-school and studying his Bible. In a few weeks he was taken into the church, and in just a few months he was

superintendent of a Sunday-school, standing up before his audience, reading God's holy word, and leading the school in prayer. Had he been sent to prison, I firmly believe he would have held fast to his religion; but was it not a wise decision of that judge that this young man did not *need* to be sent to prison? His frank and manly confession of his crime, and his willingness to receive whatever punishment the law decided to inflict, had the true ring. The officers of the law and the jury showed good sense in letting *mercy* influence them in their decision.

Last week there was an account in the dailies something as follows: A thrifty farmer had raised a nice patch of watermelons. As usual, or as very often happens, perhaps I should say, he was much annoyed by the depredations of the neighborhood boys. He expostulated and threaten-d; and finally, becoming desperate, he put poison into some of the finest ones. The next morning he found three young boys dead in his melon-patch. Now, some of the friends who are vehement in declaring that the way of the transgressor should be made hard may say that it was all right; if the boys had let the melons alone they would not have got into trouble. But, wait a bit. One of the three boys was the farmer's *own son*. Of course, he never dreamed that one of his own children was a party to the thieving. We do not know about it, but it would seem likely that the father had been so choice of his melons that he did not give his own children as many as they wanted. A good many of the readers of GLEANINGS are melon-growers, as I happen to know. They have enjoyed protecting the plants from frost, bugs, and weeds; they have worked hard to make a success. When the luscious fruit begins to ripen and reward them for their diligence, they enjoy seeing it grow. Friend Terry says in regard to that piece of ground where he had 50 bushels of wheat to the acre, he used to look at the wheat every night to see how much it had improved during the day; and when he looked out in the morning, the first thing he did was to notice how much improvement it had made during the night. You all know about these things. Now, let us imagine that melon-grower as he stood in his melon-patch on that terrible morning. Three boys dead, and one of them his own! Do you think he cared to look at the melons then? Perhaps there was not a weed in the whole field. May be the foliage presented as handsome an appearance, with the drops of dew resting on it, as it did other mornings; but what attraction was there to him *then* in all these things? What were his thoughts? We can not begin to comprehend how he groaned in anguish of spirit, "Oh! I would give all the melons in the world—I would give millions of money if it were mine—I would give the whole world—nay, I would give my *own* life itself, if I could but be back where I was before I put that poison into the melons! Oh! why was I such an idiot? Why did I not recognize that the finest melons that the world ever produced are but froth and foam—but bubbles—empty chaff—compared with the life of even one of these boys?" We do not know whether he said, "May God have mercy on such a wretch as I," or not. But, dear friends, I have not yet told *all* of that sad story. While he was standing there in that melon-patch, struck dumb by the consequences of his foolish act, the father of one of the boys had found out what was done. The evil spirit was contagious. It was in the heart of the neighbor as he looked upon his murdered boy. Without a word he leveled his gun, and in a moment more the melon-grower himself was a corpse beside his victims. What a change in

that neighborhood in one short day! Of course, this was not law. It was taking the law into their own hands. Perhaps this poor man did not know that the laws of our land forbid using poison. You can not even poison your neighbor's dog or chickens, no matter how much they annoy you. Our laws are very strict in this matter. If you have been annoyed and damaged, you can recover damages if you go about it in the proper way; but you have no right to undertake to administer justice yourself. The illustration above shows you where it leads; and who can say where the end will be?

A great many people become impatient at the slow process of the law. When President Carnot, of France, was stabbed in broad daylight, a good many people wondered that the authorities waited to go through the formality of a trial. Of course, nobody questioned the guilt of the assassin. He himself did not deny it, and yet all the formalities and delays of the law had to be observed. It was wiser and better, because of the example it set before the world. The element of *fairness* commended itself to everybody.

I can remember, when I was a boy, of hearing a man make objection to the Christian religion because it permits a man to be the veriest rascal all his days, provided he repents before he dies. This man said, that such a sinner was to be received right into the fellowship of the saints just the same as if he had been a good man all his life. The speaker did not recommend mercy. He probably recommended punishing a man all the same, no matter whether he was sorry for his wicked acts or not. Perhaps I should say first, that the Bible does not teach this at all, if I am correct. Sin or sinful lives will leave their scars; and the sinner who is truly converted will feel remorse all the days of his life for the sins he committed while he was an ungodly man. It seems to me that that judge was very much in the right when he said we wanted to do that which was *best* for our criminals. If the penitentiary will do them the most good, then by all means let them go there and stay there. Whenever it becomes evident, however, that they will be good, or turn to better lives, without the discipline of the penitentiary, then let us use mercy.* The experienced judge or officer of the law can tell pretty quickly from the attitude and behavior of a criminal whether his penitence is genuine sorrow or not for his sinful course. Since I have grown older I am getting to see these things in a different light from what I did; and it pains me to the heart to hear so much fault found with the way in which the law is administered. The *friends* of the accused, of course, complain of the severity of the law and of its officers. On the other hand, those who know nothing of the circumstances, or perhaps those who suffered from the sinful acts of the guilty one, demand punishment *without mercy*, and are not backward about accusing the officers of being bribed to let the guilty one get off easy.

Most of you who read the papers have seen more or less of the serious charges brought against the Sugar Trust; and several ministers have taken the matter up in their sermons, giving figures and scathing denunciations against these "wholesale robbers" as they term them. In a recent issue of the *American Grocer*, one divine in the city of New York has been called to order. The periodical above copied the figures the preacher gave in his ser-

mon, and gave, as it seems to me, ample evidence to show that these figures were greatly exaggerated. The speaker probably obtained them from the dailies. The *American Grocer*, in closing, said something like this: Nowadays it is customary for each industry or class of people to appoint a committee to have their industry properly presented before Congress, in order that it may have the recognition it deserves. Even the bee-keepers have done as much as this. The latter expression is my own, not from the *Grocer*. Well, the *Grocer* goes on to say that the sugar-refiners have done this, like other class organizations. Having large capital, they have, perhaps, been able to do things on a larger scale than most other industries. Then they add something which I sincerely hope is true. They say they do not believe that any member of Congress has been *bribed*, to the extent of a dollar, to favor them by any underhanded or unlawful means. Perhaps the truth lies somewhere between the exaggerated accounts of our political newspapers and the statement made by the *Grocer*; but in leaning to the side of the latter, I am reminded of the statements made only a short time ago, in these very same political dailies, about manufactured comb honey.

There are many dangers threatening us just now as a people; and I can not help thinking that one of them is the disposition to believe so readily that all men are rascals, and then recommend that they be punished without *mercy* to the full extent of the law; and when the law is slow they take the matter into their own hands, and shoot down the thieves and rascals, or, if you choose, the *apparent* thieves and rascals. A movement is already on foot to have something done to prevent lynching and mob law—to prevent hanging a man before we are really sure he is the guilty party. O dear friends, does it not behoove us to be careful? It is *impossible* to frame laws that will fit all cases indiscriminately. In view of this, shall we not get intimately acquainted with the offender, and get at the full facts of the case? and then when we condemn him to prison or to death, let us do it with a gentle and loving hand if such a thing be possible.



ON THE WHEEL.

One of the boys said the other day, that one could start out now and go anywhere without any fear of being hindered by rain. You are likely to be hindered in another way—by dust; but we can manage the dust pretty well. By the way, I wish to call attention to the social element that the wheel develops. The boy or girl who rides a wheel sees more people, gets around among folks more, and knows what is going on a great deal better than one could very well without a wheel. The wheelman soon gets to be known and recognized for miles around in every direction. He sees how other folks do things; his ideas are broadened; and on general principles he is a more valuable member of society. It is true, that, where he is disposed to be vicious, it gives him extra opportunities to get among the vicious classes. But we have to meet this at every turn. Even education itself helps a bad man to be a worse one; but we can not, even if that be true, discourage the education of the people.

* Along in this line I may mention the recent plan of letting criminals out on parole, or good behavior—especially intemperate ones. So long as they abstain from drink, they are free men; but as soon as they get on another spree they are sent back to prison to serve out the full time of their sentence.

This is the season of fevers; and I believe severe drouths are productive of fevers. If I do not ride ten miles or more almost every day, I have twinges of my old malarial chills unless I stick to my heavy clothing and fur cap. Last evening I was feeling especially miserable—no inclination to move around or do much besides lying on the lounge and sleeping. I knew, however, from former experience, where I could find life, enthusiasm, and enjoyment; so I pushed off through the deep dust. It covered the roads and filled the air; but I plowed through it. The first two or three miles the chills did not let up; but after I began to sweat a little I began to feel myself "boss," even of malarial. I went out to see a spring a neighbor was opening up. I did not get started until nearly night; and by mistake I went almost a mile back into the field. By the way, you can run a wheel through pasture-lots *now* with the greatest ease. The ground was hard; the grass was gnawed down and dried up, so there was scarcely an impediment. If you can get on to a sheep-path you will have one of the finest tracks. I went off through the fields, up hill and down, back into the ravines, and I verily believe I never enjoyed a ride out in the country more in my life. Just as it was getting dark I got track of the spring. It has been furnishing plenty of water for the sheep and other stock; but the owner has to pull it up four or five feet with a pail. He thought that, if he could run a pipe from the surface of the water to ground that was four or five feet lower down, he would have a running spring. I told him I feared the water would all run away, and he would not have any; but as it has been rising every day just as fast as he draws it out with pails, he felt sure he could make a success of it. I will report later in regard to it.

It was after dark when I finished my investigations. The dust was so deep in the path of the wagon-wheels that it was almost as bad as sand to plow through, and it was getting too dark to keep the horses' path. I soon found, however, that, by watching for the droppings of the horses, as they lay in the light yellow dust, I could, even after dark, keep the center of the beaten path pretty well; and I finished my ten-mile trip through the dust and darkness with as much health, enthusiasm, and enjoyment, as any mortal could reasonably ask for.

Yesterday, in going through a piece of wheat-stubble, where some blackberry-bushes had been cut off with the wheat, my tire was punctured by a sharp dried-up berry-stubble. While it was being repaired I was obliged to do considerable walking over the grounds. First, I had to go down to the creek bottom, then up to the windmill, and then over to the swamp garden, all on foot; and by the time the wheel was mended I had one of my old-fashioned backaches as a consequence of standing on my feet too much. Well, the ten-mile ride I have just told you about was just after this. I have got so used up in walking about and looking after things, climbing stairs, etc., that I presume I shall never get over it. Going about and attending to business on foot is far more tiresome than a straight tramp along a good road. Walking rapidly seems to employ a different set of muscles, and is more like wheel-riding; but it is not to be compared with it either in speed or enjoyment. Well, when you are tired out with business, standing around, the very minute you get into the seat on your wheel you feel rested; and the muscles that furnish the propelling power seem almost as if they had remained unused since childhood; therefore they are in full vigor. Day before

yesterday, Aug. 30, Ernest rode from Toledo to Medina, a distance of 110 miles, in 9 hours. Now, such feats as the above, instead of using him up, seem, on the contrary, to toughen and harden and invigorate him for any sort of work or business. In a recent trial of what could be done on wheels by means of relays, a message was carried from Washington, D. C., to Denver, Col., in a period of time but little more than twice that required by our railway trains. The trains have an expensive track to run on; but the wheelman has nothing but ordinary roads, and at a season of the year when a great part of the roads are in a fearful condition from sand and dust.

Now, then, with a track or narrow pathway that need not cost more than a tenth part as much as a railway-track does, what do you suppose could be done on a wheel? It is not necessary that the wheel-track be on a dead level. In fact, I believe I rather prefer a path that is a little up and down hill. The momentum one gains or accumulates in going down hill carries him nearly to the top of the next; and with a good hard path under the wheel, without any short bumps or undulations, and where the hills are not too high or steep, one goes—I was going to say, with the speed of the wind; but even I myself can leave any ordinary wind away behind; and I believe the whole wide world has never yet dared to claim that any method of travel gives any thing like the enjoyment that riding a wheel does.



HIGH PRESSURE GARDENING DURING DRY WEATHER; WHAT SHALL WE DO?

The natural answer to this question would be, Irrigate. That is, construct reservoirs, save up the water in winter and spring, and use it during the drouth. Well, this may be all right, and to a certain extent water is the very thing to have during a drouth. But it costs lots of money, and it is expensive business to apply it after you have got it; and I feel certain there is something else to be done first. A few days ago a young man whom I have known for years brought in some very fine peaches. He said he grew them himself on his clay farm right here in Medina Co., and I was a good deal surprised to hear it. That very evening I took my wheel and paid him a visit. Right back of his house were three acres of fruit-orchard, mostly peaches; and if some of the trees and fruit were not entirely equal to any thing I saw on Catawba Island, they came pretty near it. How did he manage to raise beautiful peaches, without flaw or blemish, on our Medina clay soil right during the most severe drouth we have ever experienced?

Now, there is a wonderful point right here, and it is really a glimpse of sunshine to farmers and fruit-growers. It is the same thing I have met a good many times before. Briefly, this young man has a brother-in-law who is a peach-grower near Catawba Island. It is his business, and he knows just how to succeed. Well, he visited our Medina friend some years ago, and in looking over his farm he told him he thought he could raise nice peaches even here, if he would go about it as they do up on the lake-shore; and our friend "Milo" posted himself up on the business of raising peaches, and went about it. He planted his trees 18 feet apart, over three acres of ground. Then he laid a line

of tiles between every other row. The result is, that every peach tree in the orchard is within 9 feet of a line of tiling. Then he put out his trees, worked the ground up fine and soft, planted corn, and then took care of the corn nicely. He managed exactly as Terry practices and teaches. With fine-tooth cultivators he broke the crust after every rain, and kept out all the weeds. Of course, the trees took hold and grew. I suggested that he must have manured the ground heavily; but he said he did not. He put on hardly enough to get a good crop of corn. It was tillage and not manure that did the business. No hard ground was ever to be found in that peach-orchard, neither around the trees nor among the corn. The corn did not amount to very much as the trees became large and thrifty, it is true; but it shaded the ground, and furnished fodder enough to pay the cost of cultivation. His ground is almost level; in fact, it was hard work to get fall enough for laying the tiles as they ought to be; and one spring he noticed water standing along one row of trees. A line of tile near them had got stopped up. He opened it and let the water off immediately; but that row of trees shows the injury they received, even though the stoppage of the tiles was two years ago or more. The ground had become water-soaked, the roots of the trees became poisoned, and he has not been able to get them over it. Peach-trees die because of too much wetness—seldom from drouth. He has tried watering some of his trees to see if it would pay. Keeping the ground fine, soft, and mellow seems to answer just as well or better. Is it not a simple thing, first having the ground thoroughly underdrained, and then keeping the surface soft, fine, and mellow, so that it never becomes hard and baked on the surface? The leaves of the trees looked green and thrifty. Some of the young growth had grown 18 inches or 2 feet. The wood was smooth and clean, and the trees were nicely shaped. He has been testing almost all the standard varieties, and he is succeeding with every one of them. In fact, I never tasted more luscious peaches in my life anywhere. The sight of that fruit-orchard was just wonderful to me; and then it is the old, old story. In California they do this very thing. They keep running the cultivators until the ground is just beautiful, it is so soft and fine.

Just at the beginning of the drouth I turned over some old strawberry-vines. For some reason or other I did not put on any manure. The ground was dry, so we had no trouble about working it over fine and soft down to quite a depth. I planted kidney wax beans and Freeman potatoes. The latter were not planted until the 10th of July. To-day, Aug. 31, both beans and potatoes are a mass of luxuriance; and although the beans have come up and grown almost without a drop of rain, they are ahead of anything I have been able to produce by the use of irrigation. The potato-vines do not show a particle of blight, and not a bug has ever been seen on the patch.

There is something a little funny about this plan of making garden in dry dust, without any rain. Some time during the fore part of August we prepared another strip of ground where onions had been gathered, and sowed turnips, radishes, spinach, and peas. Some of these seeds came up, but a good many more have not germinated yet. If the ground had been firmed right over the seed very thoroughly, I think all would have germinated; but I was away when it was done, and I forgot to tell the boys to roll the ground hard after sowing the seed. By the way, what an easy matter it is to keep ground free from weeds during

a time of drouth! The wax beans and potatoes I have spoken of are cultivated with a fine-tooth cultivator about once a week. Then the boys go over the whole patch very quickly with their hoes. A little purslane will start, and some such hot-weather weeds; but just a touch of the hoe, and the weeds are destroyed, and the ground is nicely mellowed. Several visitors have called recently—among them Mr. S. T. Pettit, of Belmont, Ontario; Mr. Christian Weckesser, of Niagara Falls, N. Y., and Mr. W. M. Kellogg, of Pleasant Hill, Mo. Friend Kellogg especially wanted to see what success I had had with irrigation. Well, I could not show him much success; but I took him down to the creek bottom, and showed him the beans, potatoes, and other things, with their bright, green, thrifty luxuriance. Then I took my foot and kicked down into the soil, and showed him that it was almost like road dust, only it was damp as I got down an inch or two. By the way, this creek bottom, the most of it, has a gravelly subsoil, and in this gravel there is almost always more or less water. The ground was overflowed in the spring, and the moisture has not all got out of the subsoil even yet. Perhaps this has something to do with the success of my gardening during times of drouth; but not altogether, for we have strawberries up by the windmill, thrifty and green, on the highest ground anywhere in the neighborhood. They are on clover sod, and the ground is soft and fine, like that on the creek bottom. The strawberries, however, are not making well-rooted runners, without rain. But they are growing rapidly, putting out lots of runners, which we are covering at each bud; and with the advent of rain we shall have an abundance of plants in a very short time.

It is not easy getting this very fine dust between and all around your plants, with crops in, in the spring; but after you have removed early crops you can plow the ground and work it fine and deep way down; then set out your plants, or plant your seeds, and then it is an easy matter to keep the ground soft by simply working the crust or stirring the surface, if you do not have rain. With raspberries, blackberries, and even peach-trees, it is not quite so easy. However, if you have your ground well underdrained, then finely worked up before the trees or bushes are planted, by being very thorough you can keep it soft and fine the year round—that is, whenever it is not too wet; and if thoroughly underdrained it should almost never be too wet to work. Now, then, before investing money in windmills, engines, and reservoirs, I would test thoroughly this matter of *thorough tillage*.

GARDENING DURING DROUTH.

The kidney wax beans referred to elsewhere are now giving us the finest crop of wax beans we ever grew. There is not a bean with a speck of rust on it in a whole bushel. Very likely this is because there has been no rain, and wax beans on soil like that which I have described, well cultivated, I should say are better off without rain. I do not think I ever saw a better crop under any circumstances. The two large bush limas—the Kumerle and Burpee—are also doing splendidly; but the Burpee is giving us the largest crop, because the pods are larger; there are more beans in a pod, and the beans themselves are larger. One of the boys said, a few days ago, that he could gather a peck in ten minutes. They were planted in some very poor ground—in fact, on a piece that I rented; therefore I did not go to the expense of underdraining or very heavy manuring. There is, perhaps, an eighth of an acre; and while the yield may not be quite equal to the same amount

of ground with pole beans, it is going to come pretty near it. They were planted with the rows only 30 inches apart, plants about a foot apart in the row. They cover the ground now; and although they were not planted until well along in June, the crop is going to mature nicely before frost. In fact, a good many of the pods are dry now, Sept. 8. The Burpee bush lima is a decided success. There is not a bit of trouble, so far as I can see, in raising them by the acre, and then we can successfully compete with the California limas. The high price of the seed has been the great obstacle heretofore. The Kumerle is pretty nearly up to the Burpee in yield, and I should pronounce it quite a little ahead in quality. In fact, it is to me the most delicious of any thing ever known or ever grown, in the bean family. I do not believe we shall ever again fuss with bean-poles.

THE GAULT RASPBERRY UP TO DATE, SEPT. 11.

These plants, you may remember, were set out in our rich creek-bottom ground some time in April. When the roots were received from friend Gault there was not any thing visible above ground, unless it was an inch or two of old wood. Well, at present writing many of the plants need a space of about ten feet across to accommodate the new growth. If pulled out in a straight line, I think there are single branches nearly if not quite as long as a ten-foot pole. Our hundred plants were put in two rows. One row had the ends of the branches nipped off when they were about two feet along. The other row was allowed to grow. Both rows are at present pretty well covered with fruit, all the way from the blossom up to the ripe berry. The principal part of the crop will ripen, however, during this month, perhaps just before frost. My impression is, I shall not get as much fruit on our very rich grounds as friend Gault does on his clay soil with but little manure. We shall, however, get a great number of young plants. The man who put them down reported that he got 24 tips on one single plant. The friends who have one or more of these plants will remember that just now is the time to bury the tips.

PLANTING ONION-SETS, INSTEAD OF SETTING THEM.

People of old, and many of this day, call small onions "onion-sets." Why so? I suppose it is because they have to kneel down, or go stooping along at a very slow rate to plant them, setting them in the ground one at a time, top up and root down. I have done this until I thought my back would break, and my helpers complained likewise. So I marked off a few furrows and dropped them along about the same distance I would have set them, and covered them slightly; and when up I treated them just the same as those set in; and when harvest time came, to my astonishment they made just as good a growth, and were as plump and straight, as those set in the old way; and the time required to plant this way is only about a third the old way. This plan, with me, is original. Have you ever heard of it?

Jessup, Md., Aug. 31. GEO. W. GEASLEN.

[Yes, sir, I have heard of it. If you will look in our seed catalog you will find that we have, for many years back, directed that winter (or Egyptian) onion-sets should be "sprinkled in a drill, about as we would peas, say from 3 to 5 inches apart;" and others have planted their onion-sets in the same way. There have been, however, some differences of opinion as to whether it would answer just as well; and therefore I am very glad indeed of your testi-

monial. Let me suggest, that, after covering the sets quite shallow, as you say, when they get up through the ground, say two inches high, you throw a little more dirt over them. This will not hurt the little onions, but it will kill all of the small weeds. I am sure this will answer every purpose for onion-sets that are to be put in during this month of September. Make the drills a little deeper, with the idea of doing the last covering after they are pretty well up. If you want to be sure to have a perfect stand, you can fill in the missing ones just before you do this last covering.]

TOBACCO COLUMN.

CONDITIONS UNDER WHICH WE GIVE SMOKERS TO PERSONS WHO STOP USING TOBACCO.

First, the candidate must be one of those who have given up tobacco in consequence of what he has seen and read in this department. Second, he promises to pay for the smoker should he ever resume the use of tobacco in any form, after receiving the smoker. Third, he must be a subscriber to GLEANINGS. Any subscriber may, however, have smokers sent to neighbors or personal acquaintances whom he has labored with on the matter of tobacco-using, providing he give us his pledge that, if the one who receives the smoker ever uses tobacco again, he (the subscriber) will pay for the smoker. The one who receives the smoker in this case need not be a subscriber to GLEANINGS, though we greatly prefer that he be one because we think he would be strengthened by reading the testimonials from time to time in regard to this matter. The full name and address of every one who makes the promise must be furnished for publication.

TO CURE THE TOBACCO HABIT.

[A subscriber thinks the following, which he clipped from the *Golden Rule*, ought to be given in GLEANINGS, and we think so too; so, here it is:]

From time to time I have noticed inquiries in the *Golden Rule* as to how to overcome the tobacco habit. The remedy that I will prescribe is infallible, and costs nothing but self-surrender.

I was an immoderate user of tobacco for more than thirty years, and had made many efforts to quit by means of so-called antidotes, will power, etc., but without avail until finally I realized that Paul had struck the key-note to all success when he said, "I can do all things through Christ which strengtheneth me." That little word "all," how comprehensive, although small!

The remedy is very simple; viz., prayer for help. Going to my room, I told the Lord that I was a captive to a sinful and filthy habit; that I had no power of myself to break the chain; that I was very anxious to be free from a habit that was defiling my body, which should be a temple of the Holy Ghost. I asked him to take away the terrible appetite; but, if he saw fit to test me by not taking away the craving, then to give me the strength and grace to resist, that I might finally overcome.

Thanks be to his name for ever, the appetite was instantly and completely taken away, and has never returned. Twenty-two months have passed since he so marvelously manifested his power to save me from evil habits. How true it is that Jesus saves from all sin if we will let him!

If any Endeavorer is enchained by this filthy habit, I beseech him to try the only remedy that will never fail. We should trust Jesus to make us every whit clean. If we have clean hearts and right spirits within us, these useless and filthy habits will never obtain lodgment in us.

Please send to me, for Mr. Frank E. Frey, a Clark smoker, as he has promised me he will quit the use of tobacco. If he ever again uses the filthy stuff I will pay for the smoker.

Waverly, Pa.

A. D. FULLER.

D. F. White, a bee-keeper, has used tobacco for over 15 years. He quit chewing about two years ago, and smoking last fall. He says he is entitled to a smoker. If he ever uses the weed again he will pay you for the smoker. Please send as soon as possible.

Mechanicstown, O.

W. S. STEVENS.

Please send a smoker to my address for M. E. Washburn. He said he would discontinue the use of tobacco. If he ever uses it again I will pay for the smoker. H. A. HARDER.
Annin Creek, Pa., April 28.

Mr. Wesley Hubbard, of English, Ind., has quit chewing tobacco; and if you send him a bee-smoker I will pay for it if he goes to chewing again. R. O. JONES.
Temple, Ind., May 9.

S. L. Payne has quit the use of tobacco, on account of your offer. If you see fit you can send him a smoker. He is honorable, and will pay for the smoker if he uses tobacco any more. He takes GLEANINGS with me. JAMES SCOTT.
Westfall, Or.

After having read your Tobacco Column, I concluded to quit using tobacco. If you think me entitled to a smoker, please send me one. I promise to pay for the same if I should ever use the weed again. J. A. KREHBIEL.
Donnellson, Ia., Nov. 5.

Please forward to my address one smoker for Mr. L. M. Potter, who has quit the use of tobacco, partly through the influence of GLEANINGS. If he should relapse I will see that you are paid for the smoker. FLOYD POTTER.
Silver Creek, Mich.

Mr. John Yates, of Hartford, Mo., has been persuaded to quit the use of tobacco (through GLEANINGS); and if you think him entitled to a smoker, please forward it to his address, and I will give him its security. C. A. DICKMANN.
Gehm, Mo., May 8.

Mr. J. C. Layman, of Trinity, Va., seeing your offer of a smoker to any one who quits using tobacco, decided to quit; and, thinking the smoker would be a good reminder of his resolution, I should be glad if you would send him one. I am sure he will never use tobacco again. C. E. LAYMAN.
Troutville, Va., Jan. 26.

I have noticed in GLEANINGS that you will give a smoker to any one who stops using tobacco. My neighbor, George Campbell, has quit it, and says if you wish to send him one he will pay for it should he ever use tobacco again; and mosquitoes will not tempt him either. I will see that it is paid if he uses it again. J. L. ZELLER.
Barron, Wis.

My father, after seeing your offer in your journal, which he always reads, has quit chewing tobacco, and wishes you to send him one of your smokers, according to your agreement. He has quit for about three or four weeks, and says he feels much better, and has improved in health since quitting. I am sure he will never use tobacco again in any shape. If he does I pledge myself to pay you for the smoker. T. H. FRAKES.
Branchville, Ind.

I have used tobacco for 20 years; and since I have been a subscriber to GLEANINGS I have been induced to discontinue the nasty habit; hence I now claim a smoker. I also told one of my neighbors, Mr. John W. Seneff, of your liberal offer, and he also promised to quit the use of tobacco entirely, if you will give him a smoker; and if either one or both of us ever use the weed again I will see that the smokers are promptly paid for. G. J. STURM.
Mt. Erie, Ill., May 16.

RESUMES THE USE OF TOBACCO, BUT PAYS FOR THE SMOKER.

About a year ago I got a smoker from you to quit using tobacco. I am sorry to say that I have been using it again in a mild form on account of my teeth, so I think you are entitled to pay for the smoker, as I promised. Inclosed please find money order for the same. R. H. HUMPHRIES.
Mayfield, Ky., Nov. 27.

CONVENTION NOTICES.

The bee-keepers of Utah will hold their semi-annual convention at Salt Lake City, Oct. 4, 1894. J. C. SWANER, Sec.

CHANGE OF DATE — IMPORTANT NOTICE.

In order to let all bee-keepers who can, take advantage of the Harvest Excursion rates which will be given Oct. 9th, we have concluded to change the date of the meeting to Oct. 10th, 11th, 12th. The rate will be half fare plus \$2.00. These rates apply east of the Missouri River only. Ask your railroad agent about them. Special rates of 1½ fare will no doubt be secured in the territory covered by the Western Passenger Association. These will be announced later, if secured. St. Joseph, Mo., Aug. 25. E. T. ABBOTT, Pres.

Agricultural papers will please note the change above.

REDUCED RAILWAY FARES TO ATTEND THE NORTH AMERICAN BEE-KEEPERS' ASSOCIATION AT ST. JOSEPH, MO., OCT. 10, 11, 12, 1894.

The Western Passenger Association, under the conditions named below, will grant reduced railway fare to those who travel over their roads and attend the meeting of the North American Bee-keepers' Association at St. Joseph, Mo., October 10-12.

Conditions.—Full fare will be charged going. Return tickets will be issued at one-third the regular fare, provided the purchaser presents a certificate from the agent of whom he obtained his ticket, and provided, also, at least 103 such certificates shall be presented. There can be little doubt on this point, especially as special round-trip excursion tickets, even such as are issued to parties of ten, twenty-five, or more, traveling in a body, will count toward the 100, provided each purchaser is careful to secure a certificate of purchase from the ticket agent who sells him the ticket, and to present this certificate at the convention, to be countersigned by the Secretary of the Association. Therefore do not fail to secure a certificate when you purchase your ticket, whether single or round-trip, and no matter whether you intend to take advantage of the reduced fare or not. It may aid others in obtaining the reduction.

Time of Tickets.—Valid October 6th to October 15th; that is, they may be purchased three days (not counting Sunday) before the first day of the meeting, and the return ticket may be obtained any time up to the night of October 15th.

Railroads.—The following are the roads included in this reduction: Burlington, Cedar Rapids & Nor. Railway; Chicago & Alton; Chicago & Northwestern; Chicago, Burlington & Northern; Chicago, Burlington & Quincy; Chicago & Great Western; Chicago, Milwaukee & St. Paul; Chicago, Rock Island & Pacific; Chicago, St. Paul, Minn., & Omaha; Hannibal & St. Joseph; Kansas City, St. Joseph & Council Bluffs; St. Louis, Keokuk & Northwestern; Illinois Central; Iowa Central; Minneapolis & St. Louis; Missouri Pacific; Rock Island & Peoria; Sioux City & Pacific; Washburn; Wis. Central lines.

When necessary to pass over more than one line, and in case a through ticket with a certificate can not be obtained, it will be necessary to obtain a certificate from each agent from whom a ticket is purchased, in order to entitle the holder to the reduction on return ticket.

Those who do not live within the territory covered by these lines should, wherever practicable, purchase a local or a round-trip ticket to the nearest line named above, and secure there a ticket to St. Joseph, with certificate of purchase.

Further notice will be given in case other railway lines grant reduced rates.

Harvest Excursion.—Some may be able to take advantage of the "Harvest Excursion" rates (one-half fare plus \$2.00) given October 9th, full particulars of which can be obtained of local agents.

Change of Date.—Note the change, as announced by President Abbott, in the date of the meeting, from the middle of the month to October 10th, 11th, and 12th.

FRANK BENTON,
Sec'y N. A. B. K. A., U. S. Dept. Agr.,
Washington, D. C.